THIS MONTH'S COVER

Final check is given completed and tested pressure cans before they leave an American Can Co. plant. An inspector here visually checks the cans for surface appearance and seam formation before they are packed into cartons. (More pictures of Canco's operations appear on page 53).

JULY. 1957 VOL. 2, No. 7

AEROSOL AGE

The magazine of pressure packaging

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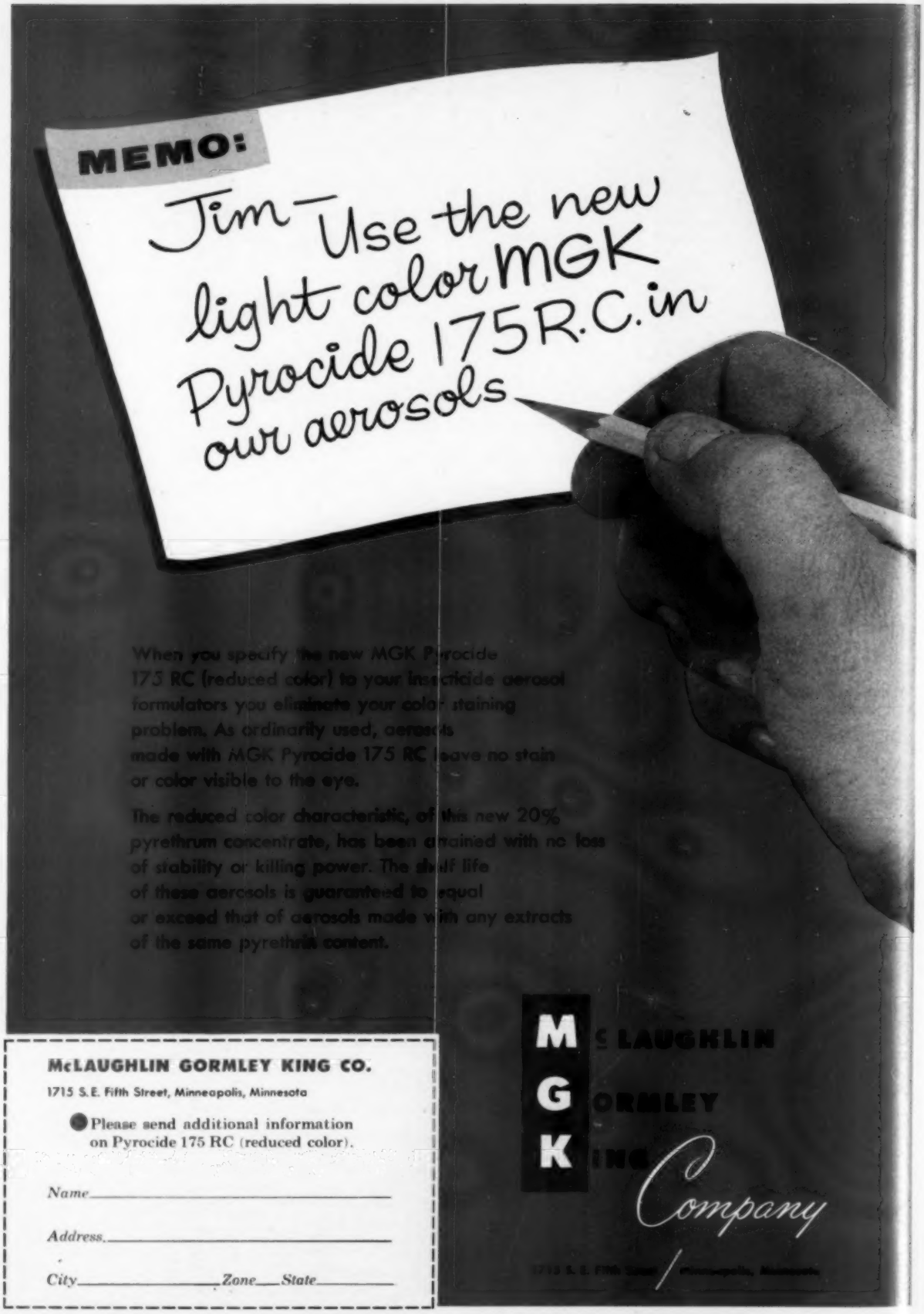

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MARKET MAGIC

There's Nothing Like Aerosols For Building Big Business These Days

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(You'll remember that in the early days of "aerosol bombs," too many yielded too poor a performance – at too high a price!)

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*Reg. U. S. Pat. Off., FMC.

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BRICKBATS and BOUQUETS from the MAILBAG

To the Editor:

Your editorial in the April issue pointing out the need for funds to launch a strong aerosol publicity campaign should be met firmly by both fillers and marketers, together with substantial aid from all other major firms who have taken a leg hold in aerosols.

In an industry which has skyrocketed to fame and fortune in a few amazing years and hopes to reach the billion dollar mark in the very near future, it is indeed a sad state when editorials must be written in an appeal for advertising dollars to help line the pockets of all of us who will actually benefit by this campaign.

The burden will be carried by a few for the profit of many, when, in the true spirit of cooperation, the advertising campaign should be borne by everyone who hopes to profit. Therefore, I would like to make this resolution for open discussion at the next meeting of the CSMA:

That all marketers of aerosol products purchasing from filling plants volunteer 1/10 of a penny on every dollar of purchase to be put aside by the filler who, in turn, will also contribute a like amount and forward all these funds quarterly to the CSMA.

My associates and myself feel very strongly about this matter and realize the terrific potential of aerosol advertising. The sooner the fillers and marketers of aerosol products recognize this fact, the sooner the project can be launched.

This is our bread and butter. We need whatever ammunition we can get to promote aerosols to the public. Certainly 1/10 of one per cent is a small premium to pay for increased sales, and it should net the publicity committee anywhere from $400,000 and up per year. A lot of magic can be performed with this kind of money, and every filler and marketer can participate.

Simon Ackerman
PRESIDENT
SPRAY MIST INC.
Brooklyn, N. Y.

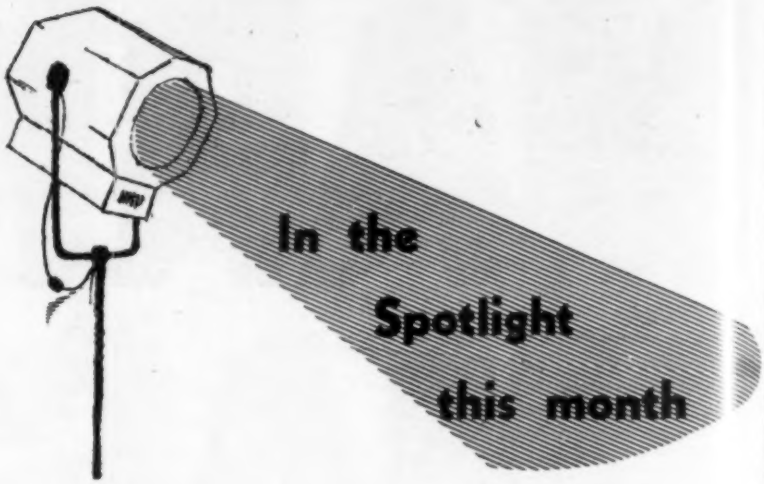
To the Editor:

Please advise where I may secure aerosol books in reference to my particular field of work—aerosol paints.

Elliott Arnold
SAPOLIN PAINTS
Brooklyn, New York

Since there are no books published on aerosols to this date, we had to refer Mr. Arnold to the various publications in the aerosol and paint fields.

(Continued on Page 68)



• **CSMA Chicago Meeting Report** . . . The aerosol industry is taken to task on the poor public relations job it has done in selling its product. Talks by Miss Virginia Gale and others highlight 10th anniversary symposium, beginning on page 14.

• **Food Aerosol Talk Highlights Scientific Papers** . . . The problem of containers for food aerosols, hydrocarbon propellants, and aluminum containers, are featured among the Aerosol Division scientific papers at mid-year meeting. Story on page 19.

• **Aerosol Product Census** . . . The industry continues its spectacular rise in total products manufactured and sold. Insecticides are displaced as number 1 in product category sales figures. Tables and charts on page 32.

• **Insect Repellents** . . . Development of new types of insect repellents opens the way for a heretofore relatively untouched market potential for aerosols. Details on page 34.

• **A New Approach to The Problem of Food Aerosols** . . . A Boston chemist proposes, on page 23, a new two-piece container to solve the problem of packaging tooth pastes, food products, etc.

• **How Safe *Are* Glass Aerosols?** . . . Maria Wiener, top woman researcher in the aerosol field, analyzes the much-publicized findings of Jack Pickthall, compares them with her own experiments here in the U.S., and draws some new conclusions about the relative safety of uncoated glass aerosols. Article on page 39.

• **The Need for Publicity** . . . Pete Clapp, Western custom filling executive, goes out on an editorial limb to wake up the industry to something each company can do to extend the work of the CSMA Aerosol Division's publicity committee. Story on page 31.

EDITORIALS

The Need for Publicity

Probably the most roundly effective (and the most illusion-shattering) talk before any recent CSMA meeting was that delivered by Miss Virginia Gale at the joint symposium of the Aerosol and Insecticide Divisions at the 43rd midyear meeting in Chicago (story on page 14). Despite the fact that she is an outsider to the industry, and that her "survey" measured a minute slice of the population, her remarks should serve to further at least two worthy objectives:

1. They should draw added backing for and interest in the Aerosol Division's publicity program. Another year's funds should be assured.

2. They should serve to orient properly all those marketers who are guilty of playing up product name at the expense of playing down the advantages of the package they are selling. Instead of devoting so much effort and expense to competing with one another they may be influenced to accept the idea that their major effort must be to gain more widespread consumer acceptance.

But the main value of Miss Gale's talk is that it should help shake the industry out of the inertia of smug complacency that has apparently been developing over the past ten years—a supreme confidence, based solely on spiralling sales figures, that "all is well and will continue to get better."

We must first admit that all *is* well and *will* continue to get better, no matter how much the industry blunders. The aerosol package is *that* good. But it must be pointed out that the gains the industry makes each year are based on the inherent and unique qualities of the package, rather than on efforts made within the industry to sell the consumer the aerosol idea. Up to now the package has been largely selling itself, and some of our advertising and publicity efforts have largely missed their prime target—the consumer.

If Miss Gale's "straw poll" is any fair measurement, the consumer is not much more aware of the aerosol package (and of what it offers him) than he was three, four, or even five years ago. What success the industry has had has apparently come through a kind of osmosis—a rubbing-off from one consumer to the next. In fact, it's entirely possible that as many aerosols have been sold by "word-of-mouth" as have been sold as the result of costly advertising campaigns.

The vagueness, incorrect answers, and general misinformation revealed by Miss Gale's "poll" reveal a fantastic potential for aerosols in the years to come. If the product message ever does begin to take effect—and if someday soon people in masses begin buying the package solely because it is an aerosol—then the time of the billion-container-a-year market is not far off.

The Aerosol Division's program committee is to be commended highly for letting the membership hear the views of Miss Gale and of Stuart Watson, of the McCann-Erickson Advertising Agency, two outsiders to the industry whose ideas were refreshing and original. Both their talks should be of considerable help in guiding future policies of the aerosol industry.

Possibly more important than anything we could write here are indications of a growing awareness on the part of people within the industry of the need for organized publicity. This is evidenced by letters (page 10 of this issue), articles (page 31), and countless comments by many industry members who feel as strongly about what *should* be done as we do.

To mark the billionth aerosol Harry Peterson, CSMA president, presents an aerosol, symbolic of the billionth unit, to Fran Allison, star of television and radio. She was selected as representative of well-groomed busy American career women.

Phil Meshberg, Emson Research; R. A. Fulton, USDA.

CSMA 43rd Midyear Meeting

Aerosol Industry Chided on Failure to Educate Consumer to Product

A CHARGE of serious failure to educate the public to the product and what the arrival of the aerosol container means was leveled at the aerosol industry as more than 800 members of the Chemical Specialties Manufacturers Association gathered for their 43rd midyear meeting May 20-22 at Chicago's Drake Hotel. Virginia Gale, Women's director of Radio Station WGN, Chicago, took the pressurized packaging industry to task for "dragging its heels" in getting the public to accept the "basic concept" of its dramatic new package.

She charged that members of the industry have been devoting far too much effort toward working on each other inside the industry, "letting the rigors of competition in the trade force the development of containers and valves, and products to be put in these containers. But as an industry, of a not uncomplicated na-

E. McCarthy, J. J. Buchanan, Jack Wallace, and Roger Wilson, Continental Can.

Z. Z. Dworkin, Glenn Chemical; Jean Baer, Pennsalt Chemicals; R. Gray and Dick Burke, Tube Manifold.

C. F. Kessler, Plasti-Kote; Ed Hay, General Aniline & Film; Sylvan Lefcoe, Par Industries; Bard Brown, General Chemical.

E. R. Lasner, Conn. Chem.; Ralph Thomas, Bristol Myers; Pete Clapp, Western Filling; Clarence Carter, Continental Filling; John Marana, Western Filling; Ed Bennett, Fluid Chemical.

ture, you have never gone outside your trade circle . . . *right to the consumer* . . . to tell your story."

. . . "Your mistake is letting your aerosol industry be merchandized as makers of a package form — for say, one product in a whole line of perhaps two hundred products in one company — letting the advertising department of that company and its advertising agency decide how much money is going to be put on that product in the aerosol container. You may be a necessity to the existence of that product, such as a hair spray, and the aerosol container can be an exciting sales point for this product, yet your benefit from this advertising will be, at best, secondary, for surely the advertising stress will be on the product itself and the trade name."

Miss Gale admitted that, eventually "secondary" benefits from this type of advertising will put aerosols across to the consumer, but cautioned that it might take years before the market opened up to anywhere near its potential. She repeatedly made the point: "*You* must gamble a stake of money on institutional advertising as an industry to trigger an avalanche of public attention for aerosol products. I don't know who else is going to blow your horn or do your educatin'."

As a result of her own minor survey she made the following points to guide any future campaign:

"1. No one expressed that this was a revolutionary principle . . . practically a spanking new method of packaging that eventually can invade every phase of our living, be sold in every type of store in which we shop, be found in all our homes and places of business. With aerosol products filtering through into the market little by little, they need someone to point out how big this story is.

"2. They don't know how much progress there's been in your development. Some don't even know there is a difference between the low and the high pressure aerosol (which carried the big news break at the beginning and attached itself to the minds of servicemen who used it).

"3. Those who go along with the idea of aerosol containers have no idea how many new types of products have been introduced in aerosol packaging so they're not asking for them. I wish someone had told me last fall that paints come in aerosol containers. It could have saved me a lot of work! Surely the paint industry isn't killing itself to let us know.

"4. There is no appreciation for this new principle coming to the aid of our civilization. Someone has to

J. E. Lee and Tom Bogaard, McLaughlin Gormley King; L. M. Sesso, S. C. Johnson; Joe Gregory, Newman-Green.

W. Kissell, Lylla R. Metry, and Frank A. Ball, all of Ungerer.

Montfort Johnson, Peterson Filling; John Rodda, Fairfield Div., FMC.

Denton Anderson, J. H. Scherer, and H. A. Kennington, Crown Can, before display advertising "Billionth Spra-Tainer Contest."

John Welsh, G. M. Basford; Harry Peterson, Peterson Filling; Norman Odell, G. M. Basford.

blow the horn for you on this note, and it's been proved that each party blows his own horn best. Gratitude and appreciation on the part of users of products are good things to build through advertising — institutional long-lasting supports for an industry."

Miss Gale drew a parallel to the early development of frozen food acceptance by the consumer. In that industry, she said, there was no institutional effort; but there was no need for one because a number of the major companies in the field made only frozen foods and hence repeatedly played up this point.

She chided the pressure packaging industry on the lack of store demonstrations to date, pointing out that this type of selling has prompted women most to become aerosol customers. "By comparison, the door-to-door salesman has been your Mercury. Quite selfishly, he used this exciting pressure spray idea as a gimmick and a leader to create buying interest in his customers, and in the operation, he became your best promoter."

Miss Gale's survey, a telephone and personal questionnaire among her friends and acquaintances, revealed an appalling lack of even rudimentary knowledge of what an aerosol is. To the question: "What is an aerosol product?" she reports that 70% missed the mark completely and "had no concept whatsoever as to what this word means."

Some of the definitions she reported (which considerably stirred up her audience) included:

"A fly spray.

"The liquid itself that you spray into the air (and which could be sprayed with a hand spray) that does away with room odors.

Virginia Gale

"A dangerous 'bomb' (and I think that word has been a detriment to your industry) for killing insects that you shouldn't have in the house with children, and that's not worth the worry of adults to have around.

"One person very seriously said 'aerosol means bad breath'."

Returning again to the lack of aerosol education displayed by the consumer public, Miss Gale urged that the consumer should be led to a point where he shops for products in aerosol containers *first*, and then looks for the trade name.

Among the future products desired by the respondents in her survey, she listed refillable containers, ketchup, nail polish, spray-on-stockings, flavoring liquids for cooking, peanut butter, cheese spreads, and a number of others.

Miss Gale's paper was one of eight given as part of the tenth anniversary symposium, celebrated by a joint session of the Aerosol and Insecticide Divisions of the CSMA.

STUART WATSON, executive vice-president of the Marschalk and Pratt Division of McCann Erickson, New York, speaking on "Aerosol Marketing — 1947, Present and Future," charged that aerosol insecticides "represent about the most unimaginative labeling of any consumer product on the market."

. . . "We seem to have failed to give the consumer memorable design or readable copy that would make it easy to buy and use our product," he declared, pointing out that this situation exists despite the fact that the package and label are one of the largest expenses in a 12-ounce aerosol.

He poised four questions to the aerosol insecticide industry:

R. Wright, DuPont; M. A. Bienvenu, Aerosol Corp. of South; Jim Heffernan, DuPont.

D. F. Lum, Givaudan-Delawanna; Mrs. Earl Brenn; A. W. Bevernick, Prentiss Drug & Chem.; R. E. Horsey, Givaudan-Delawanna.

R. Svendsen, Chase Products; F. R. Lodes, Lodes Aerosol Consultants.

"Why hasn't a market leader emerged from among the 400 brands of aerosol insecticides?

"Why is it that no one aerosol insecticide has as much as 15% of the market?

"Is this typical of other specialty package goods products?

"Is this the way to build a profitable business?"

Answering the last two questions in the negative, Mr. Watson declared: "In my opinion, brand identification and marketing leadership haven't emerged because we have not built our business on good marketing concepts. Too much of our money and time has been spent selling a gadget at a price, long past the time when this was a profitable idea. Too little of our time and effort has been directed to presenting our respective products' competitive advantages to build a consumer franchise and brand identity."

He termed the situation that existed in 1955 among wholesalers and retailers alike in the insecticide business a "shambles." "The attitude of professional buyers was well illustrated by one major chain store buyer's statement to me that he had decided to reject all the crazy deals, including consignment of products, special trade allowances, cooperative advertising, Cadillacs, and trips to Bermuda. It was his intention to buy insecticides as he would buy the other chemical specialty products for which he was responsible; that is, buy them as he needed them and according to retail movement."

Mr. Watson praised the trend toward more realistic pricing of aerosol insecticides. He advised a better orientation in marketing, predicting that over 60% of food stores' insecticide volume in 1957 will be aerosol, and that food stores will do over 70% of all insecticide volume.

H. W. "DOC" HAMILTON, CSMA Secretary, warned that, from the content of the inquiries that come to the CSMA's office, "people interested in aerosols think them so new that they're not governed by any of the existing regulations." Speaking on "The Effect of the N.A.I.D.M. and

A. H. Carnes, A. H. Carnes Co.; George Hartz, Olin Mathieson Chemical; Geo. Kerbey, Food Mach. & Chem. Corp.; Philip Mueller, Olin Mathieson.

John Odeneal, Food Mach. & Chem.; Daniel Geary, Revlon; P. H. Sagarin, VCA.

L. M. Garton and R. Hollister, American Can; E. R. Lasner, Connecticut Chem.

Don Tuttle, Risdon Valve; Joseph Forgash, Old Empire; Andrew Peasco, Risdon.

Richard Kraus and Chas. Beach, Stalfort Pressure-Pak.

Eugene Mace, S. C. Johnson; Ed McKernan, Seaquist Valve; Louis Sesso, S. C. Johnson; Roland Rhodes, Cook Chemical.

Joseph Tomlinson, General Chemical; Dick Callahan, *Chemical Week*; Miss Kay Hoelzer; Tom Wallace, General Chemical.

Bob Hamilton, General Aniline & Film; Walter Beard, Risdon Valve.

R. F. Barry and H. Isacoff, Van Ameringen-Haebler; Ed Zellar, Mojonnier Associates.

K. W. Hartley and Vincent DeFeo, Dodge & Olcott; Bob Mattair, DuPont PolyChemicals.

CSMA, as well as Government Regulatory Bodies on the Aerosol Industry — 1947, Present and Future," Mr. Hamilton said that the formula and use are the usual basis on which regulatory questions may arise.

Turning to the Food, Drug & Cosmetic Act, he pointed out that, in his opinion, "a great many companies ignore the act completely." He warned that many of these may face disciplinary action.

Mr. Hamilton advised that ICC regulations apply only to the transportation of products by rail or by truck, and that the attempt to make these regulations apply for all types of transportation and city and state regulations has been abandoned. He warned that the Port of New York Authority (which regulates travel on bridges and tunnels) is in no way bound by ICC or any other regulations. In fact, "It has been said that 'what applies in the rest of the world, does not apply in New York City'."

"THE container is now often its own salesman," declared John N. Heinen, Jr., Continental Can Co., Chicago, referring to how self-service has drastically changed merchandising methods. At the present rate of expansion, he declared (speaking on the subject of "Aerosol Containers — 1947, Present, and Future") annual production can be expected to exceed one billion units.

"Practically none of the existing markets is saturated," he declared, forecasting the following trends in the near future:

1. Container material: Use of metals other than tinplate will increase, and composite metals for aerosols are a certainty.
2. Increased convenience: American manufacturers are not interested in the gimmick of aerosols, but will strive more and more toward "repeat business."
3. Appearance will become increasingly important.
4. Shape: There will be increased pressure toward standardization of shape from a cost of manufacture standpoint.
5. An increase toward kit merchandising (two, three and

(*To Page* 62)

Food Containers, Hydrocarbon Propellants, Aluminum Cans

highlight scientific subjects at midyear meeting in Chicago

MOST contemporary methods of eliminating aeration from the pressurized product are impractical, declared W. E. Graham, of the Research Department, Can Division, Crown Cork & Seal Co., Inc., Philadelphia, in a paper prepared by himself and G. A. Klitsch for the 43rd annual midyear meeting of the Chemical Specialties Manufacturers Association. Mr. Graham's paper was one of three scientific papers delivered before the CSMA's Aerosol Division on May 21.

Expaining that, by non-aerated aerosols he meant "Those products which are dispensed from a pressure container with little or no mixing of the gas with the product dispensed," Mr. Graham said that he doubted that there are any such products on the market at present.

"With most aerosols, aeration occurs purposely or unavoidably. Space insecticides are true aerosols, and, with foams such as shaving cream and topping, aeration is essential. For such products as fruit syrup using soluble gases, aeration is unavoidable but not objectionable. For a food product such as catsup, aeration is disastrous, with color and consistency being altered almost beyond recognition. With toothpaste, its consistency and character are so changed by aeration as to adversely affect its commercial value."

Turning to the question of a possible solution, Mr. Graham described how he and his associates studied: (1) Use of films in the form of bags, pouches, or diaphragms to mechanically separate product and propellant; and (2) use of insoluble gases.

For gas non-permeability and tensile strength characteristics, the Crown researchers found the polyester films offer the most promise, and of the various mechanical approaches to using a film barrier, that of seaming the film into the top or bottom seams of the container or valve cup clinch appears to offer the greatest possibilities. "A completely sealed bag of propellant merely dropped into the container presented extreme difficulties in filling and functioning due to the entrapping of product in the folds of the bag and fouling of the valve in the finished container."

Pointing out that the valve cup clinched bag offers the advantage of eliminating the need for modification of the container, Mr. Graham said that inserting the bag into the container before filling the product would tend to create pressure on the empty bag and foul up the operation. One solution considered—a change in the filling operation to allow the bottom to be placed on the container last—was ruled out because of lack of a suitable adhesive which could join seams of polyester film with any acceptable degree of efficiency. Also it was discovered that a too small vol-

T. D. Johnson, DuPont; Ed Bennett, Jr., Products Manufacturing Co.; Al Pero and Ed Bennet, Fluid Chemical; M. J. Coppola and N. W. Kent, DuPont.

Dave Tillotson, Pennsalt; R. F. Phillips, Merck & Co.; Wiley Pickett, Pennsalt.

J. M. LeRoy, Dow of Canada; Winston Reed, Reed Research Corp.; W. E. Anderson, Bridgeport Brass; L. J. Christiansen, Dow Chemical.

ume of pouch or bag resulted (in relation to the container size), and further, that the actual forming of the bag or pouch was not possible by drawing or molding.

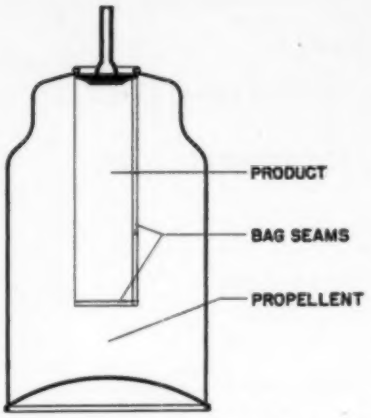
All types of heat sealing were tried in forming the bags, but, Mr. Graham reported, on practical abuse tests, the bags that had been sealed with heat, when dropped from as low as one foot in the completed metal container, ruptured near the sealed seam. This weakening of the film is considered to be due to loss of molecular orientation of the film as the result of heating. "Based on our work," Mr. Graham reported, "pouch-forming by adhesion, heat-sealing, or molding of the film does not appear practical with polyester films with techniques now available. Furthermore, attempts to fold a pouch or bag into the clinch resulted in gross leakage at the seal as the result of channeling from the multiple folds of the film."

Mr. Graham declared that, of the methods tested, the seaming of the films into the top or bottom seams of the metal containers seems to offer a greater flexibility of bag design, as well as a possible greater sealing efficiency.

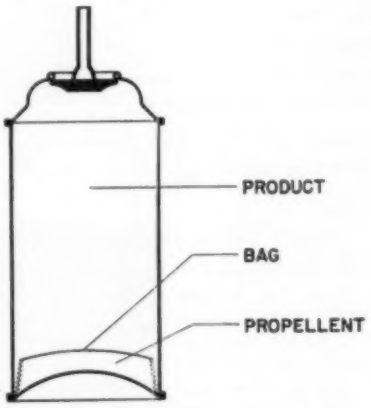
He ruled out sealing into the bottom seam because of resulting uneven expansion of the bag, which usually leaves "islands" of enclosed product. Seaming the bag into the top double seam, he said, "offers the greatest possibility of flexibility of design. The cone shape permits controlled collapse of the bag as the product is dispensed, without island formation and valve fouling. However, since a cone cannot be formed either by molding, gluing, or heat sealing, the multiple fold approach appeared to be the only possible one."

He reported that this solution wasn't satisfactory either, mainly because of the relatively high propellant weight loss (as much as 5%) on one month storage at room temperature.

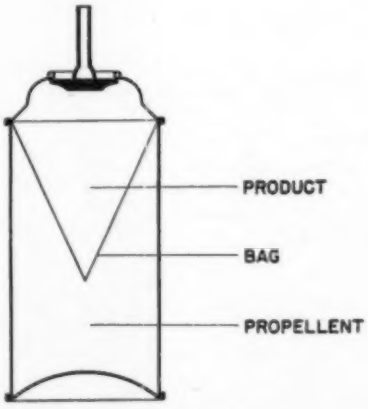
Of the inert gases, Mr. Graham reported that nitrogen appears "the most promising," though in catsup and certain other products some



Bag crimped into one-inch opening.



Bag seamed into bottom doubleseam.



Bag seamed into top doubleseam.

frothing resulted. On this problem he advised modification of the surface tension properties of the dispensed product to permit escape of the gas with the least noticeable frothing. "While this may not be too feasible in food products, it can be considered for non-food products such as toothpaste. Re-design of valves to minimize mixing of insoluble gases with product is also beneficial."

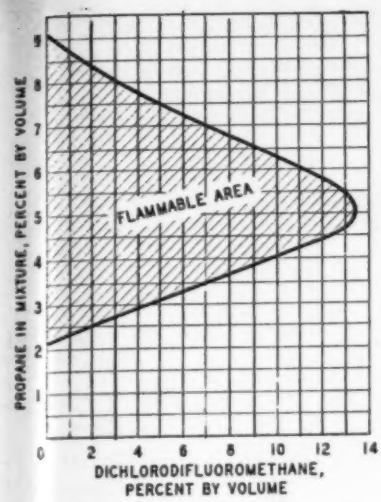
"HYDROCARBON Propellants for Aerosols," a paper by Lyle D. Goodhue and H. Franz, Phillips Petroleum Co., Bartlesville, Okla. summarized the use of lighter hydrocarbons in aerosol formulations and presented physical and engineering data useful to the formulator and packer. Dr. Goodhue, who delivered the paper, declared that, "Unless some radically new chemical is discovered, dichlorodifluoromethane will be the backbone of the aerosol industry for a long time to come."

He reported that improvements in containers have made possible the use of cheaper hydrocarbons, with reasonable freedom from flammability their one disadvantage. "Experimental and commercial applications confirm that the hydrocarbons used should be of relatively high purity to eliminate odor and oil contamination problems and provide uniformity to give consistent formulation results."

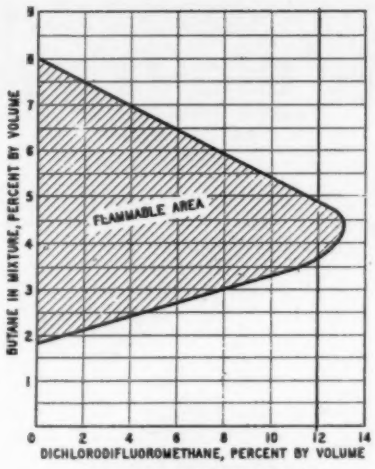
"Butane or propane or mixtures of the two will produce an excellent aerosol," Dr. Goodhue declared. "Because of their flammability they are not generally practical in formulations requiring a high percentage of propellant."

He described how hydrocarbons were proposed for use as a diluent during the war when dichlorodifluoromethane was in short supply, reporting that it was found that approximately 25% by volume could be substituted before a flammable mixture resulted.

"A second and rapidly growing use for hydrocarbon propellants is in formulations containing a relatively high percentage of water and a small amount of propellant. In some formulations the propellant is carried in the dispersed phase and in others it exists as a floatitng layer. The low density of the hydrocarbon is a distinct advantage in the three-phase aerosol. The curved dip-tube can extend to the bottom of the con-



LIMITS OF FLAMMABILITY OF PROPANE IN MIXTURES OF AIR AND DICHLORODIFLUOROMETHENE



LIMITS OF FLAMMABILITY OF BUTANE IN MIXTURES OF AIR AND DICHLORODIFLUOROMETHANE

tainer without danger of ejecting the propellant. This is not accomplished as easily with high density propellants. Hydrocarbons can also be used in non-foaming propellant emulsions where the proportion of water is high enough to minimize the flammability."

Dr. Goodhue reported that the density of hydrocarbons is only about one-third that of dichlorodifluoromethane, so that a given weight of the hydrocarbon propellant will occupy nearly three times as much space as the same weight of dichlorodifluoromethane.

On the question of stability, Dr. Goodhue declared: "At ordinary temperatures these hydrocarbons are stable and no corrosive substances are likely to be formed. They are relatively poor solvents and should give no difficulty with coatings or plastic parts. Any material that will withstand such active solvents as methylene chloride will generally be unaffected by hydrocarbons. The solvent action is quite similar to dichlorodifluoromethane."

He cautioned that the hydrocarbons are highly flammable, and that the burden of responsibility for adequate precautions will fall on the filling plant. Widespread use of liquefied petroleum gases in industrial or home applications confirms "that these hydrocarbons can be stored and dispensed safely, provided the hazards are recognized and duly respected."

Dr. Goodhue described how previous researchers discovered that 23.8% by volume (9% by weight) of dichlorodifluoromethane could be substituted by a butane-propane mixture before a flammable region was reached.

As an illustration of a class of products well adapted to the use of hydrocarbon propellants, he listed formulations that contain large amounts of water and relatively small amounts of propellant. "Shave cream, vanishing cream, cold cream, hair conditioner, hand cleaner, shampoos, and rug cleaners belong to the foam-producing type where some of the propellant is dissolved in the dispersed phase." As a typical formula he listed:

SHAVE CREAM

Concentrate	
Stearic Acid	10.5 per cent
Polyoxyalkylene lanolin	0.5
Ceranol	2.0
Mineral Oil	1.0
Petrolatum	7.0
Propylene glycol	3.0
Span 60	2.0
Tween 60	1.0
Triethanolamine	1.0
Triethanolamine lauryl sulfate	4.0
Distilled water	67.9
Methyl Parasept	0.1
	100.00 per cent
Above Concentrate	92 per cent
Propellant (Hydrocarbon)	8 per cent

EUROPE is on the verge of a big increase in the production of aluminium cans for aerosols, declared Aksel Taranger, head of canning and packaging development for Aluminium Union Ltd., Montreal, a subsidiary of Aluminium Ltd. He said that the "consolidation period" in Europe, is over, and that the greater population in Western Europe should have a considerable future effect on expansion of the European market.

He cited European development of the aluminum container, particularly the single-piece or monobloc type, which he termed "perhaps the only original contribution to the aerosol industry which Europe can claim . . . The honor really belongs to the Italians, who developed the aluminum single-piece container in 1952."

Mr. Taranger voiced criticism of existing I.C.C. regulations for aluminum containers (which, according to the I.C.C., may be used for pressures

(*Continued on Page* 60)

Ed. McKernan, Seaquist Valve; John Rodda, Fairfield Chem. Div. of FMC; J. H. Fredette, American Can.

M. J. Maury, R. G. Appenzeller, and Miss M. Weirich, G. Barr; Ken Michel, Sun Tube; Robert Burke, Felton Chemical.

Robert Muirhead and Joseph Lee, McLaughlin Gormley King; Chuck Graham and J. F. Taylor, Eastern States Chemical.

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a solution to the problem of

Packaging Food Products

THE original purpose of the development of the aerosol was to devise a method of dispensing insecticides effectively by dispersing them so finely into the air that they would float long enough to attain a big contacting surface. This objective was achieved with outstanding success, and it was this success that gave birth to a whole new industry and prompted it to utilize this same principle to dispense other products.

The time element became so essential in the highly competitive situation that developed, that the quickest possible method of adjusting various formulations to this aerosol principle was usually the one selected. Within the past 12 years almost every possible product has been put into an aerosol container with some degree of success — until now, at least in my estimation, the aerosol principle has been over-used and its peak potential already surpassed. From this point on, new developments will be considerably more difficult and slow in coming.

An analysis of the aerosol principle should give some hint as to why this is probably true. The aerosol's outstanding characteristic is that the propellant is utilized simultaneously and is always in place and time as the driving force to propel the actives *and* the carrier. These two uses always exist together in place and time, even though often only one (the driving force) may be desired. This situation is constant due to the fact that the propellant and the actives (or product) have to be mixed together.

This combination of actions of the propellant — namely, the integration of the driving force-carrier — which is so beneficial in insecticide and most other aerosol formulations to date — has proved to be a serious limiting factor to further wholesale expansion of the industry, however.

It is immediately obvious that possible toxicity of aerosol propellants excludes any marked development of non-toxic formulations, such as pharmaceuticals and foods. Furthermore, because the propellant has to be compatible with the formulation itself, any non-compatible actives to be packaged with the propellant must also be excluded.

Also, because the resulting mixtures of propellant actives must be non-corrosive and not susceptible to undesirable side reactions, home permanents, another big potential field, are also excluded from further development. Yet another resulting effect of mixing actives and propellants is the "whipping action"—a reaction that is desirable for such products as shaving creams, but is to be avoided in products like tooth pastes and salad dressings.

ONE early attempt at a solution of this problem was the development of the three-phase aerosol, but this too doesn't really go far enough toward solving the existing problem — since the propellant is separated as a phase because of non-solubility. The driving force is achieved, but because of partial solubility it still acts as a carrier, and hence there are still possibilities of side reactions.

Another attempt to solve the problem was the insertion of a flexible membrane between the phases to eliminate any surface contact between them. However, this attempt also proved unsatisfactory, since to date no membrane has been discovered which would be completely impermeable to the two phases under long exposure.

It is therefore obvious that the integration of the two actions of the propellant as both driving force and carrier, undivided in time and place and always simultaneous, is the major obstacle.

Were it possible to utilize only the potential energy of the propellant as a driving force, and to avoid or eliminate entirely its chemical property as a carrier, then sprays of non-toxic, non-compatible or corrosive products would be possible. Furthermore, other materials like aluminum, black iron, and plastics could be utilized in the containers.

The non-toxic pressurized dispenser is, I think, the solution to these problems. As the sketch indicates, (Page 24), this container consists of an outer shell, a flexible plastic bag which carries the actives, with an inflexible perforated dip tube inside a cartridge of propellant. It is equipped with a valve, an actuator, and a rubber gasket. By pressing the activator, the rubber gasket seals the opening of the shell, simultaneously allowing the dip tube to activate the valve of the cartridge.

As a consequence, vapors of the propellant fill the shell and apply their pressure to the bag, dispensing the

By

IGNATIUS E. THEODOROU
Universal Aerosols Co., Inc.

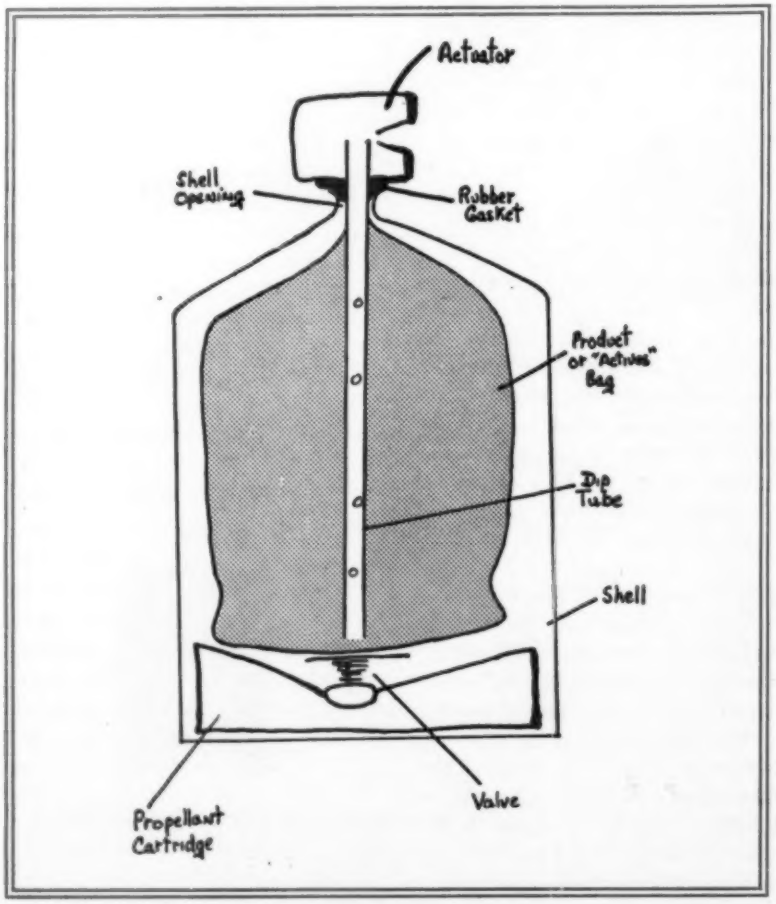
actives through the perforations of the dip tube and the orifice of the activator into the atmosphere. By releasing the activator, the rubber gasket opens and simultaneously closes the valve of the cartridge, permitting the vapors inside the shell to escape into the atmosphere. This relieves the pressure on the bag and stops the flow of the actives, thus completing one cycle of operation.

It should be noted that when the package is not in use, the propellant is always enclosed in the cartridge, and the vapors (in case of leakage) will always vent into the atmosphere. When the package is in use, the short period of dispensing is not long enough to allow permeation.

In this package the propellant is no longer a carrier, and is used only as a driving force to dispense the product. The inseparable integrated actions of the propellant (namely as the driving force-carrier, as they work in the conventional aerosol) have been separated and divided both in place and in time. Moreover, the action of the propellant as a carrier, with its accompanying limitations, has also been eliminated. This is accomplished in this new container by keeping the propellant (when not in use) enclosed in the cartridge until the very moment of use.

By use of this principle, non-toxic sprays, such as pharmaceuticals and foods, or sprays of other fluids (corrosive or incompatible with the propellant or not) are possible. Tooth pastes, antibiotics, water emulsions, salad dressings, baby foods, liquor, home permanents, hair tinctures, antiperspirants, depilatories, paints, and any number of other products may be dispensed without complications.

Actually this development can be related to something else in the news these days — the difference between aircraft and rockets. In the case of aircraft the integration of the carrier (atmosphere) and the driving force is unavoidable in order to achieve flight. However, in the case of the rocket, only the driving force is necessary and the carrier no longer is allowed to hamper the driving force. Thus the rocket can fly higher and faster than any conventional aircraft.



This non-toxic pressurized dispenser eliminates similar barriers confronting the aerosol industry — barriers such as product development and container materials. Some of the obvious material advantages it offers are:

1. It will require less propellant.
2. It allows any existing product in the market to be dispensed without added research and development and often time-consuming shelf-testing.
3. It permits dispensing of corrosive formulations which to date have not been feasible.
4. Materials such as black iron or aluminum may be used for the construction of the cans. Also, since the outside shell is under pressure only during the moment of use, most plastics will be adaptable.
5. Ordinary sanitary packaging procedures will be effective in sanitizing the bag of actives, thereby eliminating special pharmaceutical-grade propellants, plus the expensive equipment necessary for sanitary handling and storage.
6. Pharmaceutical and food industries can maintain quality control standards, since the cartridges of propellant may be purchased and assembled in their own plants.
7. Scientific experience in preserving foods may be utilized, because the conditions of preservation will remain the same, with no change of pressure or atmosphere.
8. The often undesirable whipping action is eliminated.
9. Eliminates the "cold" feeling resulting from fast evaporation of propellants, a characteristic to be avoided in some cosmetic products.

(*To Page* 64)

AEROSOLS ...in Review

"Aerosols in Cosmetics" at College Seminar

A MAJOR highlight of the special eight-week series of seminars on cosmetic chemistry at St. John's University College of Pharmacy, Brooklyn — from the standpoint of the aerosol industry — was a talk by Victor DiGiacomo, Givaudan-Delawanna, Inc., on "Aerosols in Cosmetics." Citing the tremendous rise in aerosol production since 1951, Mr. DiGiacomo attributed much of the increase in number of units packaged to the many personal products packaged in this medium.

Tracing a general history of the industry and briefly discussing propellants, and the cold and pressure filling methods of filling aerosols, Mr. DiGiacomo compared the solution of earlier problems in the insecticide field to current problems emerging in the development of cosmetics, pharmaceuticals, and fragrance products packaged in the same medium.

He first discussed in detail shave creams, which he called one of "the first personal products adapted for aerosol packaging."

"Most aerosol shave creams cannot be classified as being either a brushless or lather product since they are basically a combination of both types. This product is based on an emulsion of myristate and stearate soaps and contains additional ingredients such as wetting agents, emollients, lanolin, and others to give the end product definite characteristics.

"The fatty acid soaps are, in most cases, responsible for the appearance and working properties of the aerosol shave cream and care must be exercised that only special grades of fatty acids are used. In most instances, triethanolamine is used as the saponifying agent, and it is advisable that the finished formulation contain a low percentage of free triethanolamine to serve as a buffering agent and help inhibit corrosion.

"Foam aerosols based on triethanolamine stearates will usually have a loosely knitted lather while those based on triethanolamine myristate will give the resulting lather a closely knitted effect. Combinations of these fatty acid soaps can be used to obtain the desired physical characteristics of the foam product.

. . . "In foam products such as hand creams, colognes, and emulsified hair preparations, the addition to glycols or certain sugar alcohols plays an important part in achieving the desired physical and functional properties of the resulting product. Sugar alcohols, such as 'Sorbo,' absorb the propellant and allow the foam product to lather more readily when dispensed. When certain of the glycols are used, particularly those such as propylene glycol, that are insoluble in the propellant, the resulting product is a rather heavy, thick lather. . . ."

Mr. DiGiacomo advised that for most foam aerosols a 7% concentration of a 60-40 mixture of dichlorotetrafluoroethane and dichlorodifluoromethane is normally recommended. "We must keep in mind that the concentration of propellant which is used will have an influence on the dispensing properties of the finished container since the propellants become an intricate part of the entire formulation. Low-charged containers will result in wet products having a minimum amount of lathering. Highly charged containers will be rubbery and have a dry character."

On the subject of aerosol shampoos, Mr. DiGiacomo advised that a combination of fatty acids such as the stearates, myristates, and oleates emulsified with triethanolamine can be employed, or a formulation based on potassium stearates and triethanolamine stearate. Of the latter he warned that, unless benzyl alcohol is introduced, the product may have a tendency to "set up" in the aerosol container after long standing.

Of aerosol hair set formulations, Mr. DiGiacomo declared that the introduction of PVP (polyvinyl pyrrolidone) into the manufacture of personal hair fixatives has somewhat simplified the perfuming problem; and when such substances as diisopropyl thiourea and vinyl acetate are introduced, the product is further improved.

In powder aerosols, he declared, the manufacture of so-called "sterile cosmetics" is permitted, and oxidation and shelf life decomposition are prevented. "It was ascertained during research that 10% to 30% of solids could be utilized in an aerosol powder formulation and that a suitable propellant mixture consisted of 65% propellant 11 and 35% propellant 12."

He advised the use of a medium to prevent agglomerate sedimentation by absorbing the propellant and suspending the solid ingredients. "We recommended the use of 0.5% to 2% of a purified grade of isopropyl myristate."

"The purified grade of isopropyl myristate has excellent solubilizing and co-solvency properties as a result of which it prevents the crystallization of bacteriostatic ingredients, perfume oils, and other basic constituents which might tend to crystallize during shelf life. Larger concentrations of this suspending medium were

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found to enhance the functional properties of such products as plant sprays, leg make-up, etc., by creating a finished product with a higher residual nature which more readily adheres to a given area of application."

A GENERAL picture of insecticidal aerosols is featured in *Chemical and Engineering News* for June 3 under the title "War on Household Pests is Stepped Up." Though primarily basic in text material, and despite the fact it includes coverage of non-aerosol insecticides, the article is of interest to the industry because of some of the conclusions drawn.

It points out that the total insecticide and repellent industry has grown at the rate of 15% annually from 1939 to 1954, and estimates that the dollar volume will expand at least 25% more during the next five years. As part of the reason for this spiraling consumption, the article points to the fact that the clothes moth and the carpet beetle last year caused a combined damage of about $200 million, and that total household insect damage in the U.S. has reached over $1 billion annually.

"Steadily mounting costs offer a problem to household insecticide manufacturers as in other chemical branches. New compounds that are more toxic also cost more than older chemicals. Still, the insecticide aerosol costs much less today. In the first postwar years the retail prices ranged between $1.50 and $1.75. Price tags on the better products of 1957 are as low as 79 cents and, over the past year, 16-ounce aerosols have been introduced at around $1. Volume output and marketing is the answer. Sales of aerosol sprays may soon exceed 60 million units a year."

On the subject of insect resistance, the article says: "Insect resistance to the chemical attack on household pests is a continuing problem as it is in the field of agricultural pesticides." The article suggests that possibly better education of the consumer to use proper insecticides, increased dosages, and more frequent applications; or the use of other, newer insecticides may offer solutions in the resistance problem.

THE relative safety of "Zytel" in aerosol packaging is the subject of a feature article in the May *Drug & Cosmetic* Industry by William N. Ryan of the Polychemicals Department of E. I. du Pont De Nemours & Co., Wilmington. Though he prefaces his main discussion with a general treatment of the characteristics of "Zytel," and gives five typical formulations for personal—type aerosols, the gist of Mr. Ryan's article concerns the permeability characteristics of "Zytel" with various products packaged.

In this column aerosol subjects appearing in other periodicals (both domestic and foreign) will be reviewed and their findings summarized. It is felt that this service will enable the reader to keep abreast of most of the important contemporary articles on the industry, even though they may appear in other periodicals. Since there is a chance that some pertinent articles may be overlooked, it wil be helpful if readers will call our attention to any they judge important enough to review in this column. *The Editor*

He declares that, with the related group of hair lacquers and two antiperspirants (all of which have an absolute ethanol for their base) and the cologne and PVP hair lacquer with a 95% ethanol as the vehicle, the absolute ethanol tends to pick up moisture to an equilibrium value of about 95% ethanol and the aluminum salts are hygroscopic. "Thus the aluminum salts all tend to draw atmospheric moisture through the walls of the container into its contents. The permeation rate of water based shampoo is by far the highest of the products tested. This is not unexpected since 'Zytel' absorbs up to 8.5% when continually immersed. The estimated annual loss of about ten grams per year appears high."

Mr. Ryan points out that there is a way around this by inclusion of some hygroscopic material in the formulation to cut down this rate of loss. He says that the others appear to be "in the generally acceptable range of five grams per year or less."

"Actually, they have all shown a very slight gain in weight which was attributed to the effect noted before, that is the tendency to aborb moisture from the air, this gain in weight counterbalancing any loss of ethanol. It might be pointed out that if three to five grams per year loss of cologne or hair lacquer with PVP were considered excessive, then the substitution of absolute (100%) ethanol for 95% ethanol would effectively eliminate any over-all weight loss for a substantial period of time."

Turning to the question of comparative safety, Mr. Ryan declared: "The safety inherent in bottles of 'Zytel' was demonstrated when we simulated in the laboratory what might happen if a careless housewife left a nylon aerosol container on top of the stove long enough for the internal pressure to build up far beyond the normal 25 psi at room temperature, and even beyond the 100 psi to which all containers are routinely tested. Failure eventually came in the form of a bubble located at the equator. However, there were no sharp pieces—in fact, no flying pieces at all."

A GROWING trend among consumers to use aerosol sachets to achieve air deodorization and reodorization is noted in the April issue of *The Givaudanian*, monthly publication of Givaudan-Delawanna, Inc., New York.

"Using a high perfume content and an alcohol solvent, the aerosol sachet was designed for application to linens, closets, and lingeries. Consumers, however, have used these products for multiple applications, including use as air fresheners."

. . ."We have found that the most important constituent of the aerosol room spray, from the point of view of product acceptance, is the fragrance. The product may be highly functional, but a lack of true scent appeal will limit its sales. It is, therefore, absolutely necessary that the

fragrance be carefully formulated to meet the exact requirements of each individual product. After selection, the entire product must be properly tested for functional performance, odor stability, shelf life, and other factors. Only after these tests are successfully completed will the product be ready for marketing."

THE now not-so-new argument of cold versus pressure filling comes up again in the "European Aerosol Survey" for the first quarter of this year (Vol. III, No. 1). The publication, a newsletter published by Druk-Pak, Inc., Zurich, delivers a verbal attack on an article in the German magazine "Parfumerie und Kosmetik" for January, in which the newsletter notes that some "questionable statements are made about the relative demerits of pressure filling as against cold filling."

The Druk-Pak contribution observes that both methods of filling have disadvantages and advantages, and that each has its purpose and place and "each satisfactorily performs its intended function. It is not correct to condemn the one method in favor, or to the exclusion, of the other. Big installations require both and they complement each other. Foams and water-based products as well as food stuffs *must* all be pressure loaded. Since these items easily account for over 35% of the U.S. annual total of all such pressure-packaged products, it seems a little far-fetched — unless one has an alternative method — to run down the pressure system."

The article goes on: "If you have a large requirement (50- to 100,000 containers per day) and the products can all be filled cold, then obviously, a cold line is called for. A cold line is essentially a volume production line for long runs of the same product. In such cases, it unquestionably produces better costs and also turns out the finished products in larger volume."

Turning to the question of product types, the author says, "If you are, for example, filling paints and lacquers with different colors, then, regardless of total daily production requirement, you will probably want a pressure line, because of excessive shut-down time for cleaning with each color change in a cold line. In such case, with a pressure line, you can have two product fillers, with the one being cleaned while the other is in use and your propellant charger in constant production. This is not possible with a cold line.

"Again, if your line of fluid products gives you only short runs and you fill only 2,000 or 3,000 containers of one product at one time (with the necessity of changing over to several products during the day's operation) then you may find pressure equipment more satisfactory than cold. Obviously, if you are going to fill foam products of any kind and in any quantity, regardless of how small, then you must have pressure machines."

On the price difference argument, the article reports that a cold line costs from four to five times more than a pressure line. "We know that if the requirement is not over 10,000 per day, a cold line costing four times more cannot economically justify itself."

The article discounts former arguments about increased propellant loss, pointing out that there is practically none with modern pressure filling machines. "The latest designs have the filling head cut-off immediately above the valve stem or mounting cup pedestal so that the only gas lost is the fraction of a gram remaining in the protruding valve stem itself; or a like infinitesimal quantity between the top of the pedestal and the filling head 'O' ring."

THE filling of aerosol paints is the subject of an illustrated article in *Paint Oil & Chemical Review* for May 16. The article begins with a discussion of the pros and the cons of the paint manufacturer doing his own filling, and points out that quality control, inventory control, and production scheduling (which it says "can be used to supplement off-season lags and thus run a more efficient operation") are all factors that tend to urge the manufacturer to fill his own. Added to these factors, it is pointed out, is the fact that "having your own filling line lets you test reformulated products, and puts your chemist in a better position to do his job right."

"Against this is the immediate cash investment for equipment and personnel, the space required for the aerosol filling line, and the general headache of one more set of problems around the plant. Whether or not the line shows a profit over the cost of having your paints filled by a contract packer depends almost entirely on the production run and the volume of sales.

". . . The line equipment will cost the paint manufacturer somewhere around $10,000 for adequate start-up production, assuming some existing equipment can be put to use. It'll take 700 to 800 square feet, plus storage for the propellant. And it'll require about six men plus a key supervisor."

Swinging into a discussion of cold and pressure filling methods of filling, the article says of the former method: "The outstanding advantage of cold filling is speed. You can dump a lot of product and a lot of propellant into the open top of the container, and at a good rate. The outstanding disadvantage is the need for refrigerating equipment, and the time required to clean up the line for any changeover." Pressure filling, of course, takes more time per can, reducing output. "But a pressure filling system is much more flexible in that you can change colors or products in a lot less time than with a cold fill setup."

"Jim Jago, Gard Industries, Inc., Wilmette, Ill. believes that a paint manufacturer should install a pressure line first. Later, when production outruns capacity, the manufacturer should set up a cold fill line for long-run output and use the pressure line for research, short run stuff, and anything else that comes along.

"'I like the versatility of a pressure fill line,' he explains. 'Your best bet and the most economical — i- a small pressure filling unit. It consists

(*Continued on Page* 64)

How all of us can help meet the need for aerosol publicity

by Pete Clapp
Western Filling Corp.
Los Angeles, Calif.

THE most impressive of a distinguished panel of speakers at the special symposium, in honor of the aerosol industry's tenth anniversary, at the CSMA meeting in Chicago was Miss Virginia Gale, of Radio Station WGN. She is an "outsider" to the aerosol industry, and a pretty one at that. What she had to say about the ignorance of laymen of aerosol products — despite their readily observable fascination — has plagued me and my associates ever since.

To demonstrate to Miss Gale that her talk did some good, and that we are far more than a strictly technical organization that can't "see the forest for the trees," we would like to present the following ideas for industry consideration.

We would do well to consider the following points:

1. How can we get a basic concept of the distinctness of aerosol, or push-button, products fixed in the minds of the consumer public?
2. In conjunction with this, how do we eliminate from our language and selling pitch those often erroneous terms that may be damaging to the growth and acceptance of our products. Such terms as "bomb," "pressurized," and even "aerosol" all would, in my opinion, fall into this category.

As a first step in the right direction, we propose that the words "push-button" be accepted by the industry as most appealing and descriptive of our packages and products. We further propose that the words "bomb," "pressurized," and "aerosol" be not necessarily abolished, but used as infrequently as possible, particularly in our every-day language where they do not technically apply.

Obviously "bomb" tends to be associated with dangerous, explosive articles, and the resemblance of the early high-pressure aerosols to a riot grenade or a smoke bomb still lingers among those among the consumer public that have had military service. "Pressurized" is equally unsuited, because it includes a multitude of products completely outside our industry (carbonated beverages, beer, etc.). "Aerosol" has a specific technical definition sometimes better known in the field of meteorology than in the field of packaging. Also, foam and other non-spray patterns cannot be properly labeled "aerosol."

Possibly more important is the fact that "pressurized" or "aerosol," means absolutely nothing to almost 70% of the population. On the other hand, "push-button" immediately means *something* tangible to almost anyone — even to children. "Push-button" warfare is currently a headline newspaper subject, and there are more "push-button" shift automobiles being made every day. Push-button implies everything modern, and people like the idea. They can understand it quite readily without even wondering about technical terms they don't care a hoot about anyway. It's time we came to the realization that the "push-button age" is here right now, and has been for ten years. Moreover, we in the aerosol industry have the inside track on the story, and we can implement the change. If everyone in the industry will strive to use this term in everyday conversation and correspondence, it *will* catch on.

The tough part is making John Q. Public aware of this.

All it will actually take is for all the fillers, manufacturers, and suppliers to donate one man's time for half a day. Most of you have already indicated a genuine desire for industry publicity by donating cash to help the CSMA set up and finance a publicity program to work on the problem. But it shouldn't end there, for there is something active all of us can do.

Pick up the telephone now and call your local newspaper, and ask the editor if he is interested in a feature news story of considerable public appeal, something especially suited for the Sunday edition. Suggest that it might be entitled something like "The Push-Button Age is Here" and ask him to send a reporter out to cover the story, or at least to discuss it with you.

The rest is up to you. You should have little difficulty selling the reporter on the idea, especially with all the material you have at your disposal to offer him. Stories of this type can do your company, and the entire industry, tremendous good.

As an additional incentive, we suggest that, if you succeed in getting the article published, you cut it out and send it to AEROSOL AGE. The magazine will keep an "honor section" devoted to listing those companies which have contributed their own efforts toward successfully promoting the "push-button age."

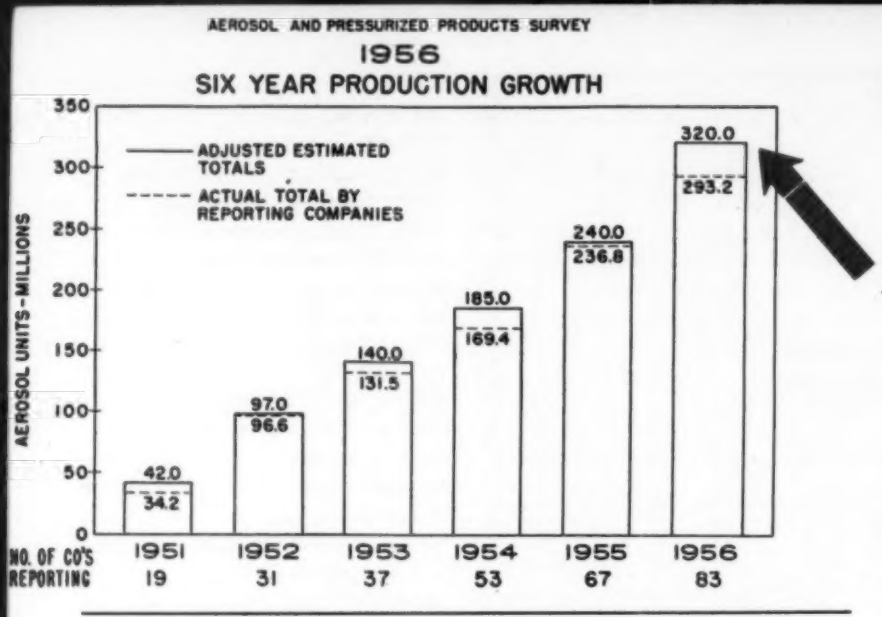
All the industry can then watch this list grow and possibly even measure it against the rising awareness of the consumer in how special a package we are producing.

All it takes to get started in your city or town is a call from that telephone next to your elbow.★

Coty Announces Expansion

Coty International Corp., New York, has announced that the sum of $500,000 to $1 million will be spent in West Germany in the coming year to build its business there.

Aerosols Continue



CSMA SURVEY OF AEROSOL AND PRESSURIZED PRODUCTS PACKED IN 1955 (NON-FOOD PRODUCTS ONLY)

1955

Number of units by the sizes indicated for each of the products listed, packed by 67 companies in 1955, including government contracts.

Product	NUMBER OF UNITS PACKED				
	Glass Containers All Sizes	Metal Containers			
		High Pressure	12-ounce And More	6-Ounce And Less	Total
1. Space Insecticides .	—	990,231	33,793,439	4,143,631	38,927,301
2. Residual insecticides (Such as roach and ant sprays)	—	12,400	7,740,078	552,352	8,304,830
3. Mothproofers	500,000	549,708	7,522,868	170,775	8,743,351
4. Room deodorants ..	—	7,500	12,402,293	19,700,387	32,110,180
5. Pigmented and metallic paints	—	—	7,203,339	520,029	7,723,368
6. Clear Plastic Sprays.	—	—	1,419,902	104,240	1,524,142
7. Fire Extinguishers .	—	—	1,930,635	41,004	1,971,639
8. OTHER HOUSEHOLD PRODUCTS (Such as waxes, oven and other cleaners, insect repellents, water repellents, rug shampoos, etc.)	500,000	—	2,826,503	2,877,600	6,204,103
9. Shaving Lather	—	—	9,098,163	36,289,212	45,387,375
10. Hair Lacquers	189,253	—	21,426,897	32,174,635	53,790,785
11. Other Personal Products(Such as shampoos, perfumes, colognes, personal deodorants, sun tan oils, hand lotions, etc.)..	8,854,831	—	1,435,589	3,930,363	14,220,783
12. Medicinals and Pharmaceuticals (Such as athlete's foot, burn preventatives, antibiotics, etc.)	357,705	—	256,500	840,974	1,455,179
13. Snow (All Types)..	—	—	5,869,673	949,044	6,818,717
14. Miscellaneous Products (Such as pet sprays, mildew preventatives, lubricants, ignition sprays, antistatic sprays, and any others)	9,771	107,916	6,793,827	2,690,253	9,601,767
TOTALS	10,411,560	1,667,755	119,719,706	104,984,499	236,783,520

FOR the first time in the history of aerosols, insecticides last year fell from the number one spot in total packages produced, reported Frederick G. Lodes, Lodes Aerosol Consultants, Inc., New York, chairman of the CSMA Aerosol Survey Committee. The committee's report, delivered at the CSMA's 43rd midyear meeting in Chicago on May 21, indicated that hair lacquer, with a "tremendous" 50% increase over 1955's figure, topped all product category figures with a total of 79,640,927 containers packaged.

Insecticides, with a 1956 production of 52,246,330 (approximately the same as the figures reported for 1955) fell to the number two position. Shaving lathers, too, failed to show any substantial increase over the previous year, although this category maintained its number three position with 42,068,498 units reported filled.

Again in number four position in units filled in 1956 was room deodorants, with a figure of 35,311,647 in 1956 compared to 32,110,180 the previous year.

The survey, covering *non-food* pressurized products, was a compilation of the total products reported filled in each category by 83 fillers of the 133 to whom questionnaires were sent. This is an increase of 16 over the 67 companies reporting in 1955. The total products filled figure was slightly under both the total valve and the total aerosol container totals reported by the suppliers in those fields.

Four container companies, described as "the major aerosol sup-

Upward Trend

pliers," reported a total number of aerosol cans produced and sold in 1956 of 327,954,551. Twelve valve companies, asked to submit a figure "representative of the total number of aerosol valves produced and sold," reported a combined total of 357,475,256.

Based on the valve and container totals, plus the consideration that several fillers that did not submit figures may have reduced the overall total, Mr. Lodes concluded: "The total number of aerosol units produced in 1956, including government contracts, as reported by the aerosol fillers, and revised by your committee, was 320,000,000 . . ."

"Based on previous estimates and a general knowledge of the prices of aerosol products on the retail market, it is estimated that the total retail value of the aerosol products sold in 1956 was approximately $320 million. This represents approximately the same growth as last year. It is very interesting to note that the aerosol production growth over the past six years has been steady, consistent, and relatively high by comparison with other industries. A 30-33% increase is both exceptional and most satisfying."

Among the other "striking and interesting facts" to which Mr. Lodes made special reference were:

"Pigmented and metallic paints and clear plastic sprays have shown a sizeable growth. In 1955, 9,247,510 units were reported and in 1956 there were 22,557,418.

"Other household products showed a growth from 6,204,103 in 1955 to 23,082,683 in 1956. This growth is very significant and indicates real success in this field. Next year we will be ready for several breakdowns in this category.

"Personal products now appear to represent approximately one-half of the aerosols produced, and this cate-

(*Continued on Page* 67)

CSMA SURVEY OF AEROSOL AND PRESSURIZED PRODUCTS FILLED IN 1956 (NON-FOOD PRODUCTS ONLY)

Number of units by the sizes indicated for each of the products listed, filled by 83 companies in their own plants in 1956, including government contracts.

Phoduct	NUMBER OF UNITS FILLED				
	Glass Containers All Sizes	Metal Containers 16-Ounce But Over 12	Metal Containers 12-Ounce But Over 6	Metal Containers 6-Ounce And Less	Total
INSECT SPRAYS					
1. Space Insecticides..	—	1,920,670	29,403,861	3,624,256	34,948,787
2. Residual Insecticides (Such as roach and ant sprays)	—	828,504	7,787,224	293,530	8,909,258
3. Residual Insecticides (Household-Garden)	—	375,836	1,156,178	145,330	1,677,344
4. Mothproofers	—	1,511,188	5,049,578	150,175	6,710,941
COATINGS					
5. Pigmented and Metallic Paints	—	6,621,482	11,839,944	1,123,042	19,584,468
6. Clear Plastic Sprays.	—	1,422,217	1,378,332	172,401	2,972,950
HOUSEHOLD PRODUCTS					
7. Room Deodorants ..	+	236,414	11,015,034	24,060,199	35,311,647
8. Fire Extinguishers..	—	1,855,571	989,499	+	2,845,070
9. Snow (All Types)..	—	1,768,519	4,143,709	498,003	6,410,231
10. Other Household Products (Cleaners of all types such as glass, metal, oven, rug and upholstery; waxes, insect repellents, shoe dressings, etc.)	1,491,904	8,599,417	4,515,238	8,476,124	23,082,683
PERSONAL PRODUCTS					
11. Shaving Lather	—	+	10,735,586	31,332,912	42,068,498
12. Hair Lacquers	5,097,320	5,639,895	21,816,463	47,087,249	79,640,927
13. Medicinals and Pharmaceuticals (Such as fungicides, burn treatments, topical antiseptics, anesthetics, antibiotics, inhalants, etc.)	723,195	+	318,516	1,233,464	2,275,175
14. Colognes and Perfumes	7,024,163	—	250,000	1,494,764	8,768,927
15. Other Personal Products (Such as shampoos, personal deodorants, sun tan oils, hand lotions, powders, depilatories, etc.)	756,412	—	1,844,271	5,028,518	7,629,201
MISCELLANEOUS					
16. Miscellaneous Products (Such as pet sprays, mildew preventives, ignition sprays, anti-static sprays, stencil ink, belt dressings, industrial applications, lubricants and any others)	+	1,997,236	6,014,805	2,342,305	10,354,346
TOTALS	15,092,994	32,776,949	118,258,238	127,062,272	293,190,453

+ Too revealing to be released.

INSECT REPELLENTS—

Another New Aerosol Marke

INSECT repellents may well become substantial factor in the summer aerosol market, according to indications from a number of insecticide formulators in recent months. There seems to be developing a big rush to get on the market with an efficient aerosol repellent product before the 1957 summer season is over, and a number of companies are in either the research or production stage on new insect repellents.

This rush to package repellents stems mainly from the introduction this year of a series of new, effective, and relatively long-lasting repellents, which have attracted more interest in the insecticide field than at any time since the early 40's. Included in this list of new products is diethyl toluamide (Hercules Powder Co. and Montrose Chemical Co.), "Tabutrex" (Glenn Chemical Co.), and MGK Repellents R-11 and R-326 (McLaughlin Gormley King).

The first of these to hit the national market in aerosol form was "Off," a formulation of diethyl toluamide in a five-ounce container developed and marketed by S. C. Johnson & Son, Inc, Madison, Wisconsin, manufacturers of "Raid" insecticides. Claimed to be "twice as long-lasting as anything now in use" the product was rushed through the developmental stages in time for the spring and summer rush buying season.

"Tabutrex," though not as effective against mosquitoes as a number of other substances, possesses such impressive repellent action against flies, roaches and other insects that it is expected to find early use in "institutional" and industrial-size aerosols. Its manufacturer predicts extensive use in institutional kitchens (against roach and ant invasions and fly infestation of garbage and storage installations) and in barns. Also, use in large-size cow sprays is foreseen.

Chemically, "Tabutrex" is di-n-butyl succinate — an odorless, colorless liquid. It is miscible with petroleum distillates, petroleum ether, alcohol, and acetone, emulsifiable in water with suitable emulsifiers, is not corrosive, and is unusually stable in all recommended formulations. It has been registered by the USDA for use on dairy and beef cattle, to repel house flies and biting flies, and as a roach and household ant repellent.

"Tabutrex" is expected by its manufacturers (who term it "among the least toxic materials ever used for insect control") to set a new trend in fly, ant and roach control. In kitchens and food processing plants, for instance, where it is often preferable — because of the problem of handling dead or dying insects — not to destroy the insects, an effective repellent is considerably more desirable. Likewise, in the control of biting insects that attack cattle, slow acting insecticides often do not kill the pest until it has bitten and flown away. "Tabutrex" reportedly prevents the resulting weight loss, annoyance to the cattle, etc., by preventing the fly from ever alighting.

"Tabutrex" has also proven highly effective against the Lone Star tick, night flying insects, confused flour beetles, termites, drosophila, and other home, garden, and farm pests.

Like "Tabutrex," MGK R-326 may be employed by itself. It is strictly a fly repellent and is not recommended for use against mosquitoes and roaches. R-11, its older brother, has demonstrated effectiveness against mosquitoes and roaches, stable flies, horn flies, and gnats.

R-11, chemically, is 2,3,4,5-bis (2-butylene) - tetrahydrofurfural. It is said to be even less toxic to warm-blooded animals than pyrethrins, and is recommended that it be used at .2% by weight in the finished spray. Like R-326, it was developed by Phillips Petroleum Co., but will be marketed by McLaughlin Gormley King Co.

R-326 is di-n-propyl isocinchomeronate, and can be used in either oil or emulsifiable sprays. It, too, is reported to be less toxic to warm-blooded animals than pyrethrins and has been registered with the USDA as a fly repellent for dairy or beef animals and as a premise spray. R-11 has been accepted by the USDA as a fly repellent on dairy cattle, and has also been registered for use as a roach repellent.

DIETHYL toluamide was developed by the USDA while in search of a new repellent for the troops fighting in Korea in 1951. Work was done at the USDA's Ento-

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How Safe Are Uncoated Glass Aerosols?

by **Maria V. Wiener**
Technical Director
Fluid Chemical Company

AN EDITORIAL on "Uncoated Glass Aerosols" (in the May issue of *Aerosol Age)* described Jack Pickthall's article "Unprotected Glass Aerosols" (in the February issue of the English magazine *Soap, Perfumery and Cosmetics)* as apparently "based on sound scientific fact." Fears were even expressed that, if his findings were verified in U. S. laboratories, the entire future of uncoated glass aerosols might suffer a severe blow. A number of researchers in American laboratories disagree with Mr. Pickthall's findings however, and rightfully so!

Propellants Are Not Ideal Gases

To begin with, certain assumptions used for calculations in the English article should be corrected. The halogenated hydrocarbon propellants in the aerosol container are *not* ideal gases, but saturated vapors far below their critical temperature and pressure. For this reason the laws pertaining to ideal gases do not apply here.

Mr. Pickthall theorizes that the "explosion" of the propellant takes place under substantially adiabatic conditions. However, for the basis of calculations of the vapor volume of the propellant he uses the Gas Law at 20°C., which indicates an isothermic process. In his example he figures that 25 grams of tetrafluorodichloroethane would expand to 3,515 cc's, and then "guesstimates" that this volume may be reduced by as much as 40%.

Application of Thermodynamics to Flash Evaporation of Propellant

If the alcohol and water in the formulation could be ignored and the reference made only to the propellant, then the amount of the propellant which can undergo flash evaporation should be calculated according to the laws of thermodynamics. A heat balance for the adiabatic process gives the following equation:

$$W \times h_f \text{ at } 13 \text{ psig} = Y \times h_g \text{ at } 0 \text{ psig} + (W - Y) \times h_f \text{ at } 0 \text{ psig.}$$

where W = Total weight of propellant in the bottle, lbs.
h_f = Heat content of liquid propellant, BTU/lb.
h_g = Heat content of gaseous propellant, BTU/lb.
Y = Amount of liquid propellant which will "flash" into vapor, lbs.

Solving for Y we obtain the formula:

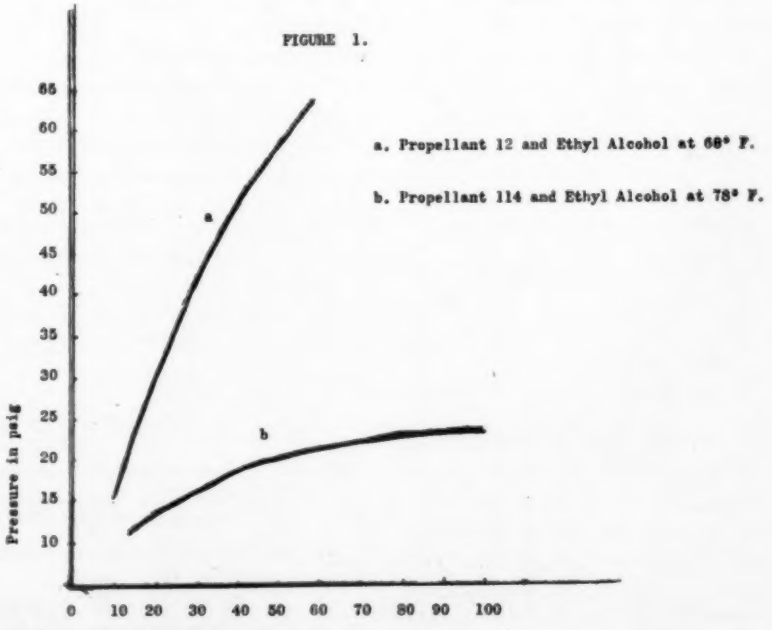
$$Y = \frac{W\ (h_f \text{ at } 13 \text{ psig} - h_f \text{ at } 0 \text{ psig})}{(h_{fg}) \quad \text{at} \quad 0 \text{ psig}}$$

where $h_{fg} = h_g - h_f$ = latent heat of evaporation

It should be noted that at atmospheric pressure (0 psig), the mixture of propellant and alcohol has a higher boiling temperature than the propellant alone. Therefore the enthalpies at 0 psig should be those corresponding to the saturation temperature of the formulation.

Using the above equation we can calculate that, when a formulation "a" containing 25 grams 96% ethyl alcohol and 25 grams tetrafluarodichloroethane at 13 psig (about 20°C.) is suddenly exposed to atmospheric conditions, the amount of propellant

FIGURE 1.



a. Propellant 12 and Ethyl Alcohol at 68° F.

b. Propellant 114 and Ethyl Alcohol at 78° F.

which can flash adiabatically to vapor is:

$$Y = \frac{25}{453.6}\ \text{lb.} \times \frac{25.44\ \text{BTU/lb.} - 18.28\ \text{BTU/lb.}}{58.86\ \text{BTU/lb.}}$$
$$= 0.0673\ \text{lb.} = 3.05\ \text{grams}\ (= 12.2\%\ \text{of 25 grams})$$

The balance of the liquid propellant will evaporate slowly and will not take part in the "explosion". This means that the amount of the gas available for flashing is reduced by 87.8% and not by 40% as estimated in the English paper. Calculated further from the vapor density of propellant 114 at 0 psig (= 0.4849 lbs./ft.$_3$ = 0.007768 grams/cc — see thermodynamic properties of propellant 114).

$$\text{One gram of propellant 114} = \frac{1}{0.007768} = 128.7\ \text{cc's of propellant 114 vapor}$$

and 3.05 grams of propellant 114 = 392.5 cc's of propellant 114 vapor.

How Many Times Do the Bottle Contents Expand on Breaking?

Let's figure the expansion factor of the bottle contents according to the formulation "a" in the British magazine (25 grams 96% ethyl alcohol and 25 grams of propellant 114).

At the moment of breaking:

The volume of a 2 oz. bottle is about	65 cc
25 grams of ethyl alcohol (96%) at 20°C. have the volume of about ...	30.8 cc
24.78 grams of the liquid tetrafluorodichlorethane at 20°C. have the volume	16.9 cc
(About 0.22 grams of propellant evaporated into the head space)	
The total volume of liquid contents at 20°C. is	47.7 cc
The volume of the head space at 20°C and 13 psig is	17.3 cc

At the moment of breaking, the gas in the head space will expand instantaneously to about 30.4 cc's (the amount of air and alcohol vapor were considered negligible). The liquid volume of the contents (decreased by 2.1 cc's of the flashed propellant 114) will be 45.6 cc's. The 3.05 grams = 2.1 cc) of propellant 114 which flash to vapor have a volume of 392.5 cc's. The total volume at the moment of breaking will be 462.1 cc's. This means that the volume of the contents of the aerosol bottle will expand from 65 cc's to 468.5 cc's, or about 7.2 times; and not 35.7 to 62.5 times as Mr. Pickthall suggests in his article.

Alcohol Retards Flashing

We would like to apply the laws of thermodynamics to the hypothetical assumption that the theoretical amount of gas which will evaporate is "reduced by as much as 40%" — "because equilibrium will be reached when evaporation of the contents of the bottle has lowered the temperature to that at which the vapor pressure of the liquid is equal to the atmospheric pressure."

Let's consider the possibility that the propellant may draw heat for flashing from the whole liquid content and not only from itself. Hence the alcohol would also have to cool off instantaneously to the saturation temperature of the mixture at the atmospheric pressure. In this case a source of heat would be added to allow more propellant to flash. Taking a heat balance for the adiabatic process, and solving for the amount Y of propellant which can flash, we obtain a similar formula:

$$Y = \frac{W\ (h\ \text{at 13 psig} - h\ \text{at 0 psig}) + A\ (t_{13} - t_0)\ c}{(h_{fg})\ \text{at 0 psig}}$$

where A = the weight of alcohol, lb.
t_{13} = saturation temperature at 13 psig
t_0 = saturation temperature at 0 psig
C = average specific heat of liquid alcohol between t_0 and t_{13}, BTU/lb.

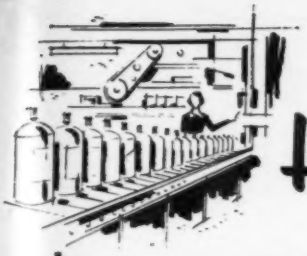
For formulation "a":

$$Y = \frac{25\ (25.44 - 18.28) + 25\ (68 - 40) \times 0.55}{58.86}\ \text{grams} = 9.58\ \text{grams}$$
$$(= 38.3\%\ \text{of 25 grams})$$

This result shows the possible amount of gas which could flash if the alcohol were able to give up its heat without resistance and without delay. Its value would be maximum 38.3% and *not* minimum 60% as estimated by Mr. Pickthall. The assumption, however, that the heat transfer from alcohol to propellant takes place without resistance and with no delay is not realistic. On the contrary, in addition to heat transfer resistance which considerably decreases the above 38.3% figure, the existing cohesion forces between alcohol and propellant (similar to those exerted on carbon dioxide by water) also retard escape of the propellant. This is confirmed by Figure 1, which shows that the vapor pressure of the contents decreases with the increase of the alcohol percentage and decrease of the propellant percentage in the formulation.

Another experiment proves that the time required for the evaporation of the propellant (same initial temperature, same volume, same surface and all other conditions constant) increases with increased alcoholic content of the formulation (Figure 2). This means that the higher heat content of the increased amount of alcohol is not immediately available for evaporation of the propellant. It rather seems that the cohesion forces in this case delay the process of evaporation even more positively. There might also be other factors contributing to this effect. In any case, little if any of the heat content in the alcohol is available for instantaneous flashing (or so-called "explosion") and the amount of flashing propellant figured by Formula I can be considered closer to the real value than figured by Formula II.

(*Continued on Page* 59)



Here's proof-by-Comparison

why more and more aerosol manufacturers are using

NEWMAN-GREEN AEROSOL VALVES

You get eleven major aerosol valve advantages—four are exclusives—when you buy Newman-Green valves. No other aerosol valve in the industry has *all* these features in a single valve. Creative Newman-Green, Inc. engineering produced this simplified valve design to help you in selling more aerosol products. Give us a call today and let our engineering services and aerosol valves help you in designing and manufacturing an even better aerosol product.

ADVANTAGES		Newman-Green Inc.	Company A	Company B	Company C	Company D	Company E
1	Pressure fills fast because it does not fill through metering orifices.	✓		✓			
2	All metering orifices in spray head easily accessible for cleaning.	✓	Exclusive Newman-Green Feature				
3	360° at spraying surface—twist top.	✓	✓		✓	✓	✓
4	No small orifices drilled in metal parts.	✓	Exclusive Newman-Green Feature				
5	Can be used on metal or glass containers.	✓	✓			✓	✓
6	Curved surface on spray button reduces finger fatigue.	✓		✓		✓	✓
7	Spray heads easy to apply after pressure filling.	✓					✓
8	Delivery tubes swedged on—not slipped over—valve body.	✓	Exclusive Newman-Green Feature				
9	Excessive swelling of gasket not detrimental to operation of valve.	✓				✓	✓
10	Spray pattern can be varied completely by changing only spray head.	✓	Exclusive Newman-Green Feature				
11	No dissimilar metals used in valve parts.	✓	✓				

NEWMAN-GREEN | *Creative Aerosol Valve Engineering*

151 Interstate Road, Addison, Illinois

Consultant's Corner

by Robert A. Foresman, Jr.

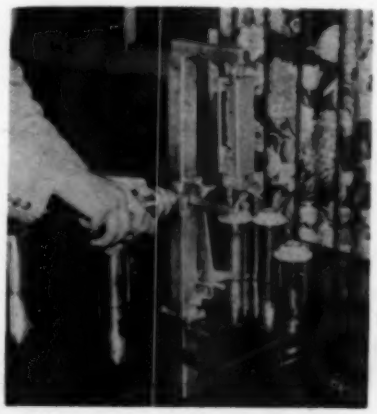
A New Device for Clinch Testing

DESIGN excellence is sufficiently rare to give me real pleasure whenever I encounter it. At the CSMA convention in Chicago such a feeling occurred and its object will be of considerable interest to the entire aerosol industry. This particularly well-designed piece of equipment is the "Clinch Torque Tester," developed by the research group at Continental Filling Corp.

I have been especially interested in the problem of clinch quality evaluation, ever since my first day at work in the Crown Can laboratory in 1948 was spent in trying to determine the reason for a leak around a one inch clinched closure. In the course of the next five years a great deal of time was spent on various aspects of the problem, with the result that the industry was provided with a clinch diameter specification and, somewhat later, a clinch depth specification. Early users of the one-inch cap will recall the difficulties that developed in proper setting of the clinching heads and determination of good clinching. In more than one instance improper clinching had caused serious monetary loss for loaders. These specifications, while leaving something to be desired, *did* provide the industry with the only means, at the time, of pinpointing trouble as soon as it occurred and avoiding it, for the most part, by checking the clinch dimensions during production. The dimensions did the job fairly adequately as long as there was only one manufacturer of cans with one-inch openings and, for all practical purposes, only one set of cap dimensions and gasket specifications.

As soon as manufacturers other than Crown began to make the one-inch curled opening, difficulties started to turn up. It was discovered that, due to manufacturing differences in the curl, the existing clinch specifications were not always sufficient. Accordingly, the old problem of "what is a good clinch" once again reared its head. A CSMA subcommittee was set up to study the problem and to attempt to set up specifications. Progress has been made, but no actual recommendations have been given to the industry to date.

The clinch torque tester in action. At top Bill Walker, Continental Filling research director, inspects the device.



The new machine developed by Continental Filling appears to have solved the problem. In principle it is simply a mechanism for determining the force necessary to twist the cap in the can opening. This is not a new approach, but the way in which it is accomplished in this case has taken into consideration every detail of the problem so that conceptually there is a total absence of weak spots in the design.

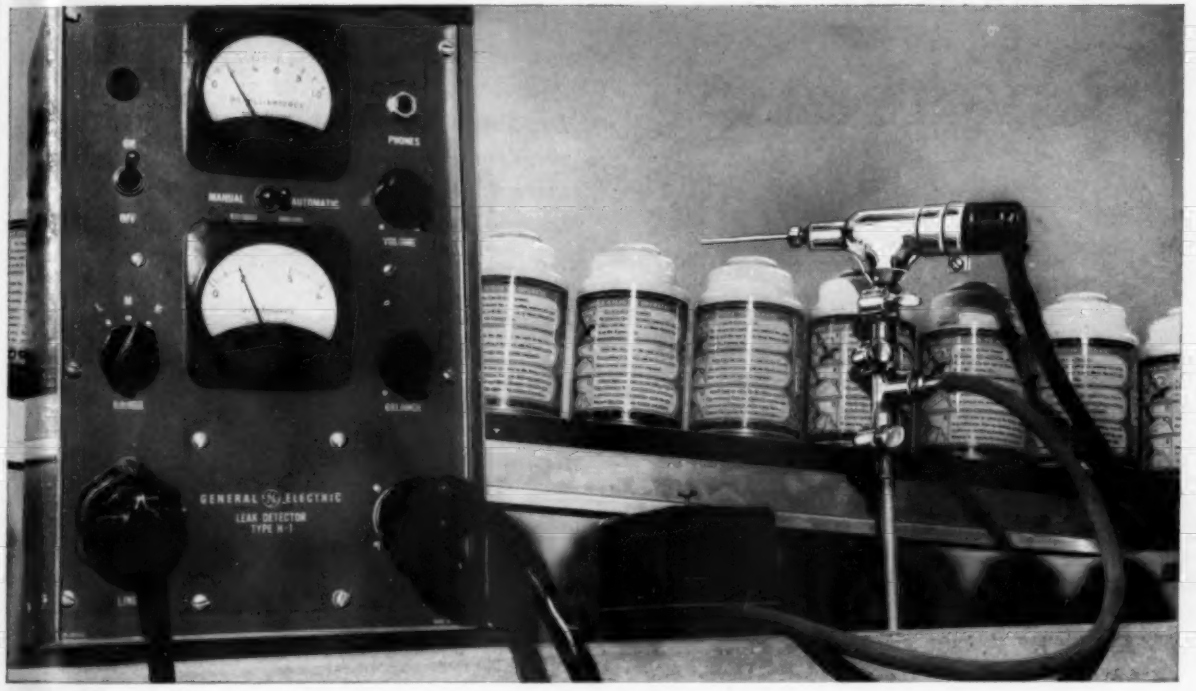
THE "Torque Tester" consists of an indicating lever attached to a knurled clamp, pivoted on a base-mounted column, which locks over the outside lip of the cap and holds it tight. After the clamp is in place, the can is grasped by the operator and twisted in a clockwise direction. As long as the clamp, the cap and the can are, in essence, one piece, the lever attached to the clamp is moved as the clamp pivots in its mount. The end of the lever is attached to a spring balance reading in inch pounds of torque (Torque may be defined simply as: Force times a lever arm — units are gram centimeters, inch pounds, etc.). As soon as the cap no longer turns with the can, the lever becomes stationary and the can continues to turn. A locking mechanism locks the lever and spring balance at the "slip" point which allows the torque to be read after the can is released. A check on the actual twisting of the cap in the can opening is accomplished by marking both the cap and the can shoulder and observing the change in the relative positions of the two marks.

My feeling is that the subcommittee may well find the answer to its problem in this piece of equi-

(*Continued on Page* 60)

NEW FROM GENERAL ELECTRIC RESEARCH

A nose so sensitive...



it sniffs defective aerosols

From General Electric research comes a new way to leak-test aerosols that provides improved quality control at low cost. Specifically designed for automatic, high-production leak testing, the new G-E leak detector checks each can quickly, automatically, and safely right on the production line.

HIGHLY SENSITIVE to any of the halogens commonly used as propellents in pressurized cans, the instrument will detect a gas concentration of only one part per million. Up to 60 cans per minute may be tested with one General Electric fixed-head leak detector ... multiple instruments may be used for 100% leak testing on faster moving production lines.

AUTOMATIC REJECTION OF FAULTY CANS can be initiated through use of an electronic relay which is available as an accessory with the instrument.

TOLERANCE LIMITS FOR QUALITY CONTROL can be set and maintained through use of G.E.'s new leak standard. This makes it possible to set the leak detector so that only gas concentrations in excess of predetermined limits will be detected.

LOW IN COST, the leak detector, with control unit and detector unit, sells for only $613.20 net.

ACCURATE LEAK DETECTION MEANS PROFITS

GENERAL ELECTRIC

FOR FURTHER INFORMATION, fill out and mail the coupon at right, or contact your nearest General Electric Apparatus Sales Office. We shall be glad to help in determining just how the leak detector can be applied to improve the quality control of your aerosol cans at low cost.

General Electric Company
Section B585-67
Schenectady 5, N. Y.

Please send me the following publications:

.....**GEC-1410**—Fixed-head Leak Detector, Type H-1.

.....**GEC-1411**—Halogen Leak Standard for calibrating the Halogen Leak Detector.

NAME_____ **TITLE**_____

COMPANY_____

STREET_____ **STATE**_____

Pressure Packaging Overseas

Dr. Tom C. Clark, of Druk-Pak, Ltd., European correspondent, discusses prices, potential market, techniques, etc., following a visit to a leading contract loader in the Netherlands.

IN Hilversum, Holland, (Aerosol Company of Holland) we recently saw the neatest little contract loading station we have run across on the European Continent. Employing both cold and pressure lines it has a maximum capacity of from 12 to 15 thousand units per day and is prepared to handle all kinds of products in all kinds of containers, metal and glass. To date, except for some light-walled, monobloc Italian aluminum cans, they have used exclusively U.S. imported cans and valves. The company is staffed from top to bottom by young people speaking all languages, some of them Europe's aerosol pioneers, and they know their stuff. Like most everything else in Holland their principal problem is to find enough space for current working needs, let alone necessary expansion plans.

Holland is favorably situated for the export market and this contract loader takes prime advantage of the location. Products are shipped in under bond—valves, cans, propellants, etc.—put together in the package and then re-shipped to South African, South American and other over-seas destinations free of Dutch duty on the temporary imports. In fact, some German companies find it more economical to contract load in Holland for their export business than in Germany. From what we could learn, propellants are somewhat cheaper in Holland than they are in the countries of manufacture and this perhaps applies to cans, too, as local sales taxes in the countries of origin do not apply to exports. With German imports this is a straight four per cent price reduction.

In Holland we also saw samples of an interesting new two-piece aluminum aerosol can, impact extruded, of course. Instead of the standard one inch opening, the work tool forms a circular ridge about the same diameter around the top, punches a small hole in the middle and also forms, on the underside, the lower chamber for the valve. The valve parts are then inserted from the lower opening, crimped in position and the dip tube applied. Another development is under way to extrude the entire dip tube along with the can body, inserting the valve parts from the top, holding them in place by crimped flanges. The plastic spray head is fitted into the circular ridge formed on the top. An aerosol can made in this fashion in one operation would save three valve parts—mounting cup, lower valve housing and dip tube—as well as reducing assembly costs and the valve crimp.

We understand there is some difficulty with internally lacquering this kind of can and, of course, it presents the problem of bottom loading. But the cost conscious Europeans are applying their technical inventiveness along the right lines and if such a can with staked-in valve comes out cheaper than the other combinations, we are all for it.

THE Dutch domestic market itself we under-estimated rather badly some time ago. Last year's production was well over one million and 1957 could run close to two million, including exports. Many old and prominent companies are already house-filling their own products and quite a few more will get into the game either this year or next. Insecticides, air fresheners and hair lacquers have the lead, but household and automobile products are commencing to appear. Again, we had the impression it is the retail end prices which hold back a stimulated market turn-over.

Comparatively, the Dutch prices are still too high for the low buying power. Shaving lathers are the best example. The normal sized tube of brush lather soap costs the equivalent of from 35 to 40 cents U. S., while the six-ounce aerosol lather retails for a minimum of $1.00. Why, asks the workingman, should I pay more than double for the same thing, which may not even last as long? Under these circumstances even the manufacturer hesitates.

Holland has about 11 million population and the greatest population density (about 900 inhibitants per square mile) of any country in the

(*Continued on Page* 68)

IT'S A WEIGHTY MATTER...

... this business of choosing the most pleasing, the most effective, the most economical—in short, the *just right* fragrance for your aerosol product, detergent, toilet soap or other perfumed specialty. It's a matter of choice which may very well affect the sales and ultimate success of your otherwise fine product. So fragrance selection *is* a weighty matter—a matter for sound judgment and it's in this phase of your product's development that we feel our services can be most helpful. Our matchless facilities, experience and skilled personnel are at your disposal for expert solution of any perfuming problem you may have. Feel free to consult us, whatever your requirements might be.

—ALWAYS DEPENDABLE—
ODORANTS and DEODORANTS
for INDUSTRIAL and
TECHNICAL USE

▲

MADE-TO-ORDER FRAGRANCES
for PERFUMES, TOILETRIES
and COSMETICS

▲

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BASIC PERFUME and
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NEWS of Pressure Packaging

Burke to Head Lenk Co.

Kenneth W. Burke was recently elected president of The Lenk Manufacturing Co., Boston, replacing Col. D. Allen Lenk, who was elected chairman of the board. Mr. Burke has served as vice-president and assistant treasurer of the company since 1950 and has been vice-president of The Lenk Co. of Franklin, Ky. since 1954.

Other officers of the company are Burton D. Lenk, executive vice-president; Marguerite Daoust, treasurer-secretary; Mortimer Lenk, sales vice-president; and Edgar Lenk, vice president in charge of manufacturing.

•

Sprayway Opens New Plant

Sprayway, Inc., Chicago, last month announced the opening of a new plant, with a production capacity of 50,000 aerosol units per day, in Fort Lauderdale, Florida. The firm, formerly called Tru-Pine Co., is currently producing 26 different varieties of aerosol products.

According to Herber Ehler, Sprayway president, the additional production facilities were necessitated by sales increases. He said that Florida was selected as the site of the new plant because of the "booming" economy of the South and lowest costs there for shipping the company's products to Latin American markets.

As its initial step to increase sales in the Florida market, Sprayway has launched a radio, television, and newspaper advertising campaign—placing major emphasis on insecticides, glass cleaners, and mildew proofers. Mr. Ehler pointed out that

•

Stalfort of Pa. Changes Name

Stalfort of Pa., Inc., Norristown, Pa., one of the larger custom fillers in the East, has announced that effective May 1 the company redeemed all shares of stock held by members of John C. Stalfort Co., Baltimore, and that the Norristown firm will henceforth be identified as "Thomasson of Pa., Inc."

In the realignment J. W. Bampton, president of Krylon, Inc., also became president of Thomasson; J. J. McElroy, Jr., treasurer; and Thomas M. Hyndman, Jr., secretary. At the same time the company announced the appointment of David R. Bagenstose to the position of vice-president and general manager.

Mr. Bagenstose served with the International Resistance Co., Philadelphia. His last position with that company was as sales manager.

Mr. Bampton stated that the company's sales of aerosols, production facilities, development laboratories, and personnel has expanded substantially and that the transition to Thomasson of Pa., Inc., has "enabled closer coordination of the company's activities and plans."

G. Barr Names Heffron

William Heffron has been named chief chemist for the Bronx, N. Y. plant of G. Barr & Co., Chicago custom filler, according to an announcement made recently by Rud Saacke, plant manager. Mr. Heffron headed chemical and mechanical operations for Castor Oil Products, Yonkers, N. Y., from 1948 until he joined G. Barr. Previously he served six years as chemist with the Joseph Dixon Crucible Co., Jersey City.

•

TGA '58 Convention Changed

The Toilet Goods Association last month announced that the site for its 1958 convention had been moved from Miami, Florida to the Poland Spring House, Poland, Maine. The change was decided on after a poll of the association's board of directors. Current plans call for members to arrive in Poland, Maine on June 25, 1958 and depart June 29.

Fire Destroys DeMert & Dougherty Chicago Plant

A SPECTACULAR fire that called out 200 firemen and 40 pieces of fire-fighting equipment destroyed the Chicago plant of Aeropak, Inc., an affiliate of DeMert & Dougherty, Inc., a leading Midwest aerosol filler, on May 24. Early estimates of the damage ranged from $250,000 to $300,000, but Chicago Chief Fire Marshall Raymond Daley said it might go considerably higher.

The fire completely destroyed DeMert & Dougherty's offices and the production facilities of the company's aerosol filling division, though it was announced that the latter division has since resumed operations at the firm's Richmond Street plant. Sometime this summer the division will be relocated in new quarters, to include "introduction of new aerosol facilities."

Paul Peterson, production manager at the plant, was quoted by *The Chicago Daily News* at the scene of the fire as saying he believed the plant was a total loss. 80 workers successfully evacuated the building without injury. The fire was marked by several small explosions, which at times seriously hampered the firemen and sent thousands of cans cascading into the air—some with such force that they landed 100 yards away.

Mr. Peterson told the *Daily News* that he believed the blaze started as the result of an electrical short circuit. Louis Elson, a maintenance worker, reported hearing a loud "whoosh" and said he then saw the fire spreading out from a large can of paint solvent. His attempts to put out the fire with a hand extinguisher were unsuccessful.

Chlorothene does a double job in spot-remover formulations

. . . lowers costs in several aerosol formulations

Chlorothene® saves money twice when it's put to work as an ingredient in spot-remover formulations.

First, it cuts costs by replacing a more expensive type of depressant. Second, it also serves as the active ingredient! The powerful "built-in" solvent action of Chlorothene does a superior cleaning job, but has no adverse effects on any type fabric.

Many other money-saving formulations contain Chlorothene, including moth-proofing and water-proofing products and insecticides. In all these formulations, Chlorothene cuts costs as a pressure depressant. It often permits elimination or reduction in the use of solvents with objectionable odors. It's a more stable, safer solvent (low in toxicity) and it has application in many nonflammable formulations.

We'd like to send you some information about Chlorothene—uses, costs, properties and other interesting facts. Write us today. THE DOW CHEMICAL COMPANY, Midland, Michigan, Department SO1026M.

YOU CAN DEPEND ON DOW

To Be WARF Director

Phillip V. Stone has been appointed director of the Insecticide Division of the Wisconsin Alumni Research Foundation Laboratories, Madison, Wis., a leading independent laboratory in screening of new materials for insecticidal activity and testing of formulated aerosol and non-aerosol insecticide products. He succeeds Dr. George S. Kido, who left the foundation on July 1 to become director of product development of the West Coast Division of O. M. Scott & Sons Co.

Mr. Stone, an entomologist, received undergraduate and graduate training at the University of Wisconsin. He has been associated with WARF for ten years.

•

Carbide Planning New Lab

The Union Carbide Chemicals Co. Division of Union Carbide Corp., New York, recently announced that it has approved plans to build a technical service laboratory on its property near Tarrytown in New York's Westchester County. The laboratory, which will include facilities for the company's aerosol activities, is scheduled for completion early in 1959.

•

Penick Buys Dow Aromatics

S. B. Penick & Co., New York, last month announced the acquisition of the Aromatic Chemicals Compounding Department of the Dow Chemical Co., Midland, Mich. Effective June 1, Penick will produce and market all aromatic blends formerly manufactured by Dow.

The present compounding and technical personnel will be retained by Penick, and under the terms of the agreement, Penick purchased from Dow the entire physical inventory of merchandise and equipment, formulas, trade names, trade marks, and patents pertaining to the compounding division. Operations will continue at the current location in Jersey City, N. J. Correspondence and inquiries should be directed to Penick's Aromatics Compounding Dept., 50 Church Street, New York 8.

•

Vaughn in New D&A Post

The Dewey & Almy Chemical Co., Cambridge, Mass., a division of W. R. Grace & Co., recently announced that James L. Vaughn has joined the company as assistant research director in charge of process design and development. The firm is the major supplier of synthetic rubber and rubber processing equipment for aerosol mounting cups. Mr. Vaughn will supervise Dewey & Almy's pilot laboratory.

•

Fairfield Appoints Brett

The Fairfield Chemical Division of Food Machinery and Chemical Corp., New York, recently announced the appointment of R. "Larry" Brett as district manager for its Chicago office. A B.Sc. graduate of McGill University, he did graduate work at the Ontario Agricultural College, Guelph.

Mr. Brett served on the Scientific Committee of the CSMA, and was formerly associated with the West Disinfecting Co.

•

Hauptschein in New Post

The advancement of Dr. Murray Hauptschein to the post of group leader in the Organic Research Department of Pennsalt Chemicals Corporation's Technical Division was recently announced. Dr. Hauptschein is well-known in the fields of organic fluorine chemistry and polymerization. Prior to joining Pennsalt as a senior research chemist in 1955, Dr. Hauptschein was director of organic chemical research at the Research Institute of Temple University.

Information Exchange Urged

United States and European impact extruders should "work for a greater interchange of information for their mutual benefit," declared Kenneth M. Leghorn, president of Sun Tube Corp., Hillside, N. J., a subsidiary of American Can Co. Mr. Leghorn made the statement last month on his return from an extended European business trip, during which he visited eight countries.

He noted that, although there is already a certain amount of cooperation between the two groups of extruders, the exchange program could be stepped up. "European impact extruders have the benefit of longer experience in this industry than we do, while we have much to offer in the way of modern facilities and production know-how." He remarked on a trend in Europe toward increased use of ferrous metals for impact extruding, and expressed a belief that steel metals will some day be impact-extruded on a greater scale in the U.S.

•

Johnson in Beckman Post

Beckman Instruments, Inc., Fullerton, Calif., manufacturer of gas chromatographs, has announced the appointment of Anthony M. Johnson to the post of product line sales manager, Systems Divisions. Mr. Johnson had been Southeastern regional sales manager for Beckman's Scientific Instruments Division in Washington, D. C.

TGA Convention Attracts Aerosol Group

A gathering at the May Toilet Goods Association Convention in New York included Herbert Kainik, perfume consultant, Dodge & Olcott; Dr. Olin Marton, chief perfumer, Shulton, Inc.; Herbert Sommer, chief perfumer, Prince Matchabelli; and Maria Wiener, research director, Fluid Chemical Co.

Advantages of Aluminum for Aerosols Cited by French Firm

by Pierre Pautry
President
Etablissements Ch. Pautry
Bellegarde (Ain), France

FOR both small and medium size capacities, the one-piece seamless aluminum aerosol container has been greatly acclaimed by the European pressure packaging industry.

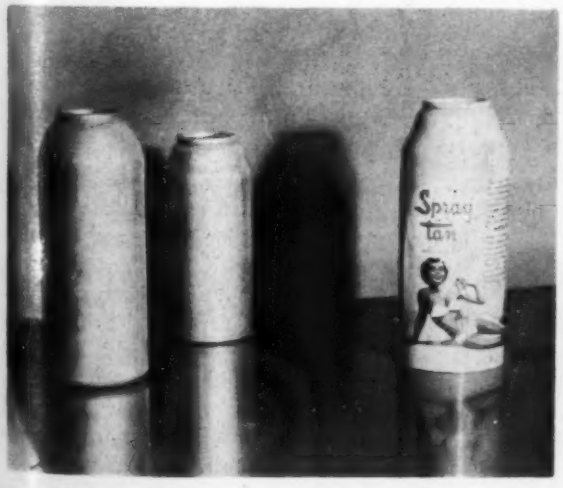
The many advantages inherent in the use of this type container have assured a highly successful acceptance for many types of aerosol products. In fact, several new applications will also immediately suggest themselves. Besides being competitive in cost with the more conventional aerosol containers, the use of aluminum offers many aesthetic advantages. Since the containers are produced by deep drawing, the walls have a uniformly smooth surface—a truly streamlined profile without sharp angles to disturb either eye or touch appeal. The containers can readily be enameled or 'metallized' (anodized), offering an unlimited field for the package designer. Perhaps the day of the solid 'gold' aerosol is not far off!

Market surveys conducted in France also indicated that consumers are extremely partial to the smooth satin finish of aluminum, as compared with other types of container materials.

Historically the development of a one-piece aluminum container considerably antedated the start of the aerosol industry in France. These earlier 'necked' containers were costly, inasmuch as the constriction operation to form the neck was performed manually. Realizing that cost was an all important factor, our research people developed (after many years of experimental work) an automatic mechanical process for the manufacture of aerosol containers which allowed low cost high production of units with a remarkably uniform quality.

Being fully aware that safety of the pressurized package also deserves full attention, the aluminum containers as they are now produced will withstand an internal pressure of 30 Kg/cm² (425 lbs./in.²) before distortion. The valve opening will itself withstand a force of 240 Kgs (530 lbs.) before distortion. Internal lacquer systems have also been developed to protect against corrosive action of certain types of concentrates.

To us here in France it appears certain that the introduction of a one-piece aluminum aerosol container in the United States, using these low cost production techniques, may offer considerable promise to all segments of the American aerosol industry, as well as a substantial return to the fabricator.★



Typical of the containers produced by Pautry Aluminum are those pictured at left, all of which come in the standard one-inch opening. The container at right is being used to package "Spray Tan."

•

Thompson in New Post

T. C. Thompson was recently elevated to vice-president of sales and administration by Reddi-Wip, Inc., Los Angeles, as part of the company's stepped-up sales and advertising program for 1957. Formerly marketing director, Mr. Thompson was sales manager of the Milk Specialties Division of Carnation Co. for 19 years and for five years previous to his Reddi-Wip assignment was a vice-president of Horlick's Corp.

Replacing Mr. Thompson as marketing director is Arthur White, a former account executive for N. W. Ayer & Son in New York and prior to that a Colonel in the British Army. To the post of Western regional sales manager, Reddi-Wip named Robert Dennis, a former account executive with Dan B. Miner Advertising Agency, Los Angeles.

•

Philip Libson Honored

Philip Libson, head of the packaging design department of Max Factor & Co., Hollywood, Calif., has been named "Packaging Man of the Year" by the California Packaging Club. He was cited for "his many contributions to the advancement of the packaging industry."

•

Grace Elects Silbersack

The Grace National Bank of New York recently announced the election of Walter F. Silbersack as a director. Mr. Silbersack is president of American Home Products Corp., New York, producer of packaged drugs, cosmetics, and household products, and the parent company of Boyle-Midway Inc., aerosol manufacturer.

Big Rise in Use of Aluminum Predicted

ALUMINUM manufacturers expect to grab a substantially larger share of the U.S. market and to branch out considerably in aerosols, reported the *Wall Street Journal* last month after making a special survey of leading can producers in the country. Continually rising tinplate costs, improved production techniques, and a number of other factors are all expected to combine to push aluminum into a far larger share of the currently estimated 42 billion can market.

Author of the article, Charles Obertance, *Journal* staff reporter, directed inquiries to Continental Can, American Can, Kaiser Aluminum, Reynolds Metals, Bridgeport Brass Co., Victor Metal Products Corp., and a number of smaller can producing firms throughout the country. Of all these firms, only Concan's board chairman Gen. Lucius D. Clay expressed some caution on the subject. He said, "Aluminum cans cannot now compete in price with cans made of tin plate and probably won't be able to do so for some time, unless there are some new developments." However, he acknowledged that Continental is actively experimenting with aluminum cans.

Canco's president William C. Stolk, according to the *Journal*, "indicated the position of aluminum is more enhanced as a competitor of plated-steel cans as steel prices increase. He predicted aluminum 'will play a big part in can production as the price of steel increases and as cost of aluminum decreases.' He added that Canco has been experimenting with aluminum cans for several years and has machinery that can produce aluminum cans."

A Kaiser spokesman reported that his company already has an order for 5.5 million aluminum cans for a food processor, and he revealed that his company is "readying four production lines at its new aluminum container plant in Wanatah, Ind."

J. Louis Reynolds, executive vice-president of Reynolds Metals, said his company "has been working with problems concerning the use of aluminum by the canning industry for a long time and has developed many different types of canning packages.'"

Among the companies queried, the only ones that mentioned aerosols were Bridgeport Brass and Victor Metal Products Corp., Newport, Ark., which the article reports "expects to be producing aluminum cans in a pilot plant before the end of this year. The concern expects to reach full commercial production by next spring. Victor Muscat, president, predicts one million units will be produced annually by 1960.

"Mr. Muscat claims his company will produce aerosol cans to sell at $45 per 1,000, still leaving a 'substantial profit.' Tinplate cans, used for dispensing aerosol products, currently sell for $45 per thousand, he said."

John S. Dawson, vice-president of Bridgeport Brass Co., said his company sees a bright future in aluminum specialty cans, particularly for aerosol packages.

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Van Ameringen Names 2

Van Ameringen-Haebler, Inc., New York, recently announced the appointment of Joseph I. Brennan and William N. Henderson to its staff. Mr. Brennan will be in charge of development and coordination of personnel and industrial relations activities in the firm's various plants and branch offices. He was formerly personnel manager of the surgical products division of American Cyanamid Co., New York.

Mr. Henderson will be responsible for coordination of research and development projects. He was formerly with Allied Chemical & Dye Corp., New York.

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Foster Named to Par Post

Par Industries, Inc., Los Angeles, Calif., West Coast custom filler, recently named Gerald G. Foster to the position of production manager. Mr. Foster had been manager of the Los Angeles plant of G. Barr & Co., Chicago.

•

Bradley Expands Staff

Bradley Container Corp., Maynard, Mass. a subsidiary of American Can Co., last month announced the addition to its staff of two sales engineers in an expansion of its sales organization. Howard K. Gray, formerly with J. P. Stevens & Co., Inc., was assigned to the New York district office; and M. Walthall Turner, who had been associated with Marketing Agents, Inc., will make his headquarters in San Francisco. Bradley manufactures "Bracon" plastic tubes and bottles.

Queen Visits Dutch Perfume Plant

Queen Juliana of the Netherlands made a royal visit on April 25th to the factories of Polak & Schwarz, Zaandam, the Netherlands. In the photo at left the Queen inspects the formula for "Visite Royale," a new scent developed in honor of her visit. From left to right are C. Faber, a P. & S. perfumer; A. Schwarz, company director; Mrs. W. Thomassen; Queen Juliana; C. C. Brummer, company director; and W. Thomassen, Mayor of Zaandam.

Aerosol Pharmaceutical Symposium Set for Aug. 20

THE Aerosol Symposium for the Pharmaceutical Industry, an introductory course in aerosol packaging techniques for individuals in the pharmaceutical industry, will be held Aug. 20 at the Philadelphia College of Pharmacy and Science, 43rd Street, Kingsessing & Woodland Avenues, Philadelphia. The symposium, the first such gathering organized by a college or university, will bring together five top-flight industry speakers and two college authorities on the subject.

The industry speakers will each cover their own field of specialization. Dr. Martin Barr, associate professor of pharmacy and director of the college's aerosol study program, will discuss "Possible Pharmaceutical Applications for Aerosols." Other speakers will include T. D. Johnson, Jr., DuPont's "Freon" Products Division; David S. Tillotson, head of Pennsalt Chemicals "Isotron" Sales Services; W. Earl Graham, division manager of research, Crown Can; Walter Beard, Jr., director of research, Risdon Manufacturing Co.; and Robert A. Foresman, Jr., Philadelphia aerosol consultant. The moderator of the symposium will be Dr. Linwood F. Tice, associate dean and director of the department of pharmacy, Philadelphia College.

The registration fee of $10 includes the luncheon. Persons interested in attending are invited to contact Dr. Barr at the College.

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Edwin Hay in New Post

Polak & Schwarz, Inc., New York, late last month announced the appointment of Edwin P. Hay to its sales staff. Mr. Hay, who was formerly associated with General Aniline & Film Corp., handling P.V.P. and related products, will devote himself to the sale of perfume compounds, essential oils, and aromatic chemicals in his new position.

AEROSOL SYMPOSIUM FOR PHARMACEUTICAL INDUSTRY
PHILADELPHIA COLLEGE OF PHARMACY AND SCIENCE
AUGUST 20, 1957

Moderator — Dr. Linwood F. Tice
Associate Dean and Director of the
Department of Pharmacy
Philadelphia College of Pharmacy and Science

9:15 A.M. Welcome—Dr. Ivor Griffith, President
Philadelphia College of Pharmacy and Science

9:30 A.M. *THE AEROSOL MARKET*
Thomas D. Johnson, Jr.
Manager, Aerosol Propellant Sales
E. I. DuPont de Nemours & Co.

10:00 A.M. *THE AEROSOL PACKAGE*

a) 10:00 A.M. *TYPICAL AEROSOL SYSTEMS AND PROPELLANTS*
David S. Tillotson
Head, Isotron Sales Services
Pennsalt Chemicals Corp.

10:55 A.M. Intermission

b) 11:10 A.M. *AEROSOL CONTAINERS*
W. Earl Graham
Division Manager of Research
Crown Cork and Seal Co.

c) 11:15 A.M. *AEROSOL VALVES*
Walter E. Beard, Jr.
Director of Research
Risdon Manufacturing Co.

12:30 P.M. Luncheon

1:45 P.M. *POSSIBLE PHARMACEUTICAL APPLICATIONS FOR AEROSOLS*
Dr. Martin Barr
Associate Professor of Pharmacy
Philadelphia College of Pharmacy and Science

2:45 P.M. Intermission

3:00 P.M. *ENTERING THE AEROSOL FIELD*
Robert A. Foresman, Jr.
Aerosol Consultant
Philadelphia, Pa.

4:00 P.M. General Conclusions — Dr. Linwood F. Tice

CrodaNews

TO THE USERS OF
LIQUID LANOLIN

HAVE YOU TRIED?

"FLUILAN"
PURE LIQUID LANOLIN

LIGHTER IN COLOR—LESS ODOR

The analysis of a typical batch of Fluilan:

Unsaponifiable Matter %	42
Cholesterol in this Unsaponifiable %	23
Acidity as Oleic max %	2
Clouding Point oC	26
Iodine Value (Wijs)	27
Viscosity @ 40oC. (Redwood No. 1 secs) 2000	
Viscosity @ 25°C. (Ford Cup No. 4 secs)	850
Saponification Value mgms. ..	95
Pour Point oC	20
Volatile Matter @ 100°C. % ..	0.3

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MU 3-3090

Products— Processes— Bulletins—

New Paint Spray Nozzle

A novel paint-spray nozzle, marketed by Seymour of Sycamore, Sycamore, Ill. makes possible the application of multicolor, textured "splatter patterns" with ordinary spray-package enamels. The nozzle attaches to Seymour's six, 11 or 16-ounce aerosol cans of enamel.

The "splatter" technique is accomplished in three steps: 1) Apply base color from regular aerosol can, using conventional nozzle. 2) Allow base coat to become tacky (usually in 10 to 20 minutes). 3) Apply "splatter" coat with new nozzle attached to six-ounce can, standing four feet or more away from subject.

The new nozzle is being distributed through wholesalers and jobbers to regular Seymour paint accounts.

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New Conveyor of Nylon

A new flat-top conveyor chain that combines a rivet-free nylon carrying surface with precision steel roller chain is now available from the Link-Belt Co., Chicago. The new nylon top plates do not stretch, are resistant to chemicals and corrosion, are only half the weight of similar all-steel chains, and are shock absorbent. The resiliency of the nylon is said to reduce glass breakage markedly.

•

New Cholesterol Folder

American Cholesterol Products, Inc., Edison, N. J., last month issued a four-page illustrated folder on "Acetulan — A Hypo-Allergenic Acetylated Liquid Derivative of Pure Lanolin." The product, which is described as "literally made to order for aerosols" is used as a plasticizer, co-solvent, penetrant, emollient, and protective agent for skin and hair in cosmetic aerosols.

In addition to a description of the characteristics and uses for "Acetulan," the folder gives aerosol formulations for hair fixatives, hand lotion, and hand cream.

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Conveyor Belt Catalogue

A two-page illustrated catalogue that explains how its "Griptite" package conveyor belt can solve many incline and decline conveying problems has been published by B. F. Goodrich Industrial Products Co., Akron, Ohio. A feature of the conveyor is a high rib every 18 inches which serves as a cleat to stop lightweight packages from slipping down the belt.

Canco Develops New Process

The American Can Co., New York, recently announced a new process for mass producing metal cans directly from the giant coils of tinplate. The development, reportedly the result of an attempt to combat continued rises in the price of steel, will eliminate the necessity of cutting the metal into sheets before shaping the cans.

Canco made the announcement as final equipment installation was completed on the company's new coil plant at Tampa, Florida, the first such plant in the can-making industry. The coil lines at the new plant automatically inspect, cut, and sort sheets of tinplate and steelplate (from coils weighing up to 15,000 pounds) at speeds reaching 600 feet a minute.

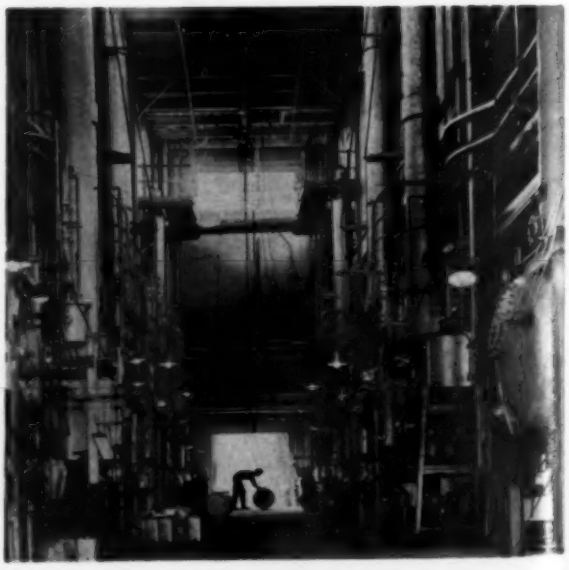
•

New Lab Fluid Dispenser

Palo Laboratory Supplies, Inc., 81 Reade Street, New York, has introduced the "Corinth Finger-Tip Fluid Dispenser," a device designed for frequent dispensing of small amounts of fluid for routine laboratory needs. Operating at the touch of a finger tip, it is said to eliminate loss, contamination, unwieldliness, and guesswork in measuring out small amounts of liquid. It can be drop-calibrated for quantitative delivery of milliliter amounts.

Van Ameringen-Haebler Expands Facilities

As part of a $1.5 million expansion program for its Union Beach, N. J. plant, van Ameringen-Haebler, New York, recently completed the installation of 15 distillation units for the production of aromatic chemicals for the perfume and chemicals specialties industries. The units include three-column continuous operation equipment and various other stills for large volume batch production. The new plant also includes a number of specially designed reaction kettles and other equipment to permit broader utilization of hydrogenation processes.



Canco Aerosol Lines Running Full Blast

12-ounce pressure cans roll in a shining stream from a giant testing machine at an American Can Company plant. The tester, which resembles a huge wheel, subjects each can to air pressure to determine if it is airtight. Precise methods of manufacture limit rejects to a reported one can in two thousand.

12-ounce pressure cans entering a double seaming closing machine to receive their tops. The operator, shown loading the pre-formed tops, must move briskly to keep up with the double seamer's 200-can-a-minute pace. The cans are formed on a conventional high-speed bodymaking machine, then receive their bottoms on the double seamer in the background. Putting on the tops is the next step.

Book on Aerosols Completed

A new book "Aerosol Packaging," believed to be the first volume-length text on the subject, was published recently by Druk-Pak, Inc., Zurich. Written by Dr. Tom C. Clark and appearing in English and German texts, the book sells for $6 U.S. or 25 Swiss Francs for single copies.

The volume, 50-pages in length, is reported to cover all aspects of the package from propellant to finished, loaded container. It contains information for anyone exploring the field and also many useful hints for those already in the business, and tells in detail what is needed in the way of valves, cans, labels, loading machinery, etc. to fill aerosols. A number of current technical problems and techniques are discussed.

•

Aerosols Standard Theme

An "Aerosol Round-Up" is the theme of the second issue of "Standard News," a publication of Standard Aromatics, Inc., New York, released in June. The bulletin, based on a survey of new merchandising plans in the field of aerosols, studies such products as depilatories, deodorant foams, sachet sprays, cedar sprays, window cleaners, and other aerosol products. Suggestions are made with regard to types of fragrance, spray characteristics, choice of propellant, and other factors.

Among the ideas discussed are the reuse of parts of purse-size perfume sprays, the use of a dual package for products, cooling foot sprays formulated with a minimum of ethyl alcohol, and solubility problems encountered in lavender sachets.

•

D&O Issues Price List

Dodge & Olcott, Inc., New York, has issued its new "Catalog and Price List of Essential Oils, Aromatic Chemicals, and Certified Colors." A booklet 5½ by 8½ inches, the new catalogue contains 38 pages of product listings, market information, descriptive material and prices; and has been completely revised and restyled.

•

Glass Container Twister

The "Styl-O-Matic Powered Twister", a new unit that is said to solve the problem of how to get out heavy particles of foreign matter that are missed by the vertical air cleaners that clean glass containers right side up, has been announced by Island Equipment Co., Long Island City, N. Y. The twister automatically turns the containers 180°, which allows foreign particles to drop out.

•

Crown Aerosol Catalogue

The Can Division of Crown Cork & Seal Co., Inc., Philadelphia, recently announced that the third edition of its catalogue "Pressure Packaging," is currently available to the trade. The booklet is a collection of complete information about the one-use pressurized can, including the types of products that can be packaged; the names of suppliers of valves, loading equipment, and independent loading contractors. The catalogue is available upon written request to Dept. HT, Crown Cork & Seal Co., 9300 Ashton Road, Philadelphia 36.

make 'em **REACH**
for **YOUR BRAND**

Many a race is won by a nose . . . especially sales races in which the odor of your aerosol is a decisive factor in establishing brand preference. Use MM&R perfume oils and neutralizers to increase the sales-appeal of your insecticides, space deodorants, shave creams and other aerosol-packaged products. It's a sure way to "Make 'em reach for your brand!"

Write for full information. The MM&R Technical Staff will be glad to select or develop a perfume oil to meet the exacting requirements of your product, propellant and container.

MAGNUS, MABEE & REYNARD, INC.

Since 1895 . . . The World's Most Famous Supplier of Essential Oils and Basic Perfume Oils

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DEVELOPED FOR THE CONSULTING LABORATORY, THIS APPARATUS IS THE ULTIMATE IN FUNCTIONAL DESIGN AND PERFORMANCE

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High Pressure Test Bombs
Can Sampling Units — Piercing or Valve Actuating
Pressure Gauging Unit — Pressure Balance or Water Filled
Flammability Set
Test Ovens — Standard or Custom Built
Instantaneous Chiller Units — Mechanically Refrigerated
Electric Hot Water Test Bath Standard or Custom Built
Hot Water Bath Transfer Baskets Safety Top
Tank Racks
Table Tank Rack Combinations
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Plastic Protective Screens
Gloves
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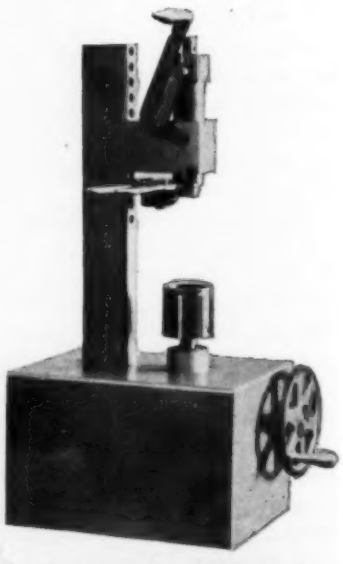


Foresman Hand Operated Vial Capper

VAH Founder Honored

A. L. van Ameringen, chairman of the board of van Ameringen-Haebler, Inc., New York, perfume and flavor materials manufacturer, was recently named to the board of governors of The Menninger Foundation. Former treasurer and member of the executive committee of the National Association for Mental Health, Mr. van Ameringen joins a group of nearly 100 professional and business leaders who are assisting in development of this non-profit psychiatric center.

Mr. van Ameringen last month celebrated the double anniversary of his fortieth year in the United States, and in the American fragrance industry. A native of The Netherlands, he organized his own company after a brief term as U. S. representative of a European perfume manufacturer. Through growth and merger, the company has become an important world factor in the fragrance and flavor industries.

•

CSMA Holds Press Reception

The Aerosol Division of the Chemical Specialties Manufacturers Association played host June 12 to women's editors of newspapers, wire services, homemaking and shelter magazines to mark the production of the billionth pressure-packaged, push-button aerosol. Held in the Petit Salon of the Park Lane Hotel, New York, the press reception program included the showing of an animated color film on aerosols and their many household uses; a demonstration of how aerosols are made and how they work; and a product display.

A gold-plated aerosol, symbolic of the billionth unit produced recently by the industry, was displayed dramatically in a lighted frame, and the ladies of the press each received an assortment of the newest aerosol products as a gift.

Purpose of the press reception was to acquaint women editors of leading consumer publications with the wide variety of presently available aerosol-packaged personal and household products; bring them up to the minute on an industry that has had a phenomenal 10-year growth due mainly to acceptance of aerosols by the women of America; and to give them a peek at aerosol products of the future.

•

Mina Speaks to Pharm. Group

Dr. Francis A. Mina, technical director of Lodes Aerosol Consultants, Inc., New York, was guest speaker before the May meeting of the Pharmaceutical Research Discussion Group. The group, made up of key technical personnel of the major pharmaceutical companies located in and around Northern New Jersey, convenes monthly for a luncheon-discussion meeting at the Hotel Suburban, East Orange, N. J.

In his talk, Dr. Mina covered developments in the aerosol field of particular interest to the pharmaceutical industry, including the various pressurized principles, containers, valves and formulations.

Following the talk, the discussion group entered into a detailed question and answer period with particular emphasis on pharmaceutical applications. Aerosol survey figures were studied and growth potentials reviewed. Frederick C. Lodes, a guest at the meeting, participated in the general discussion and stressed the emphasis being placed on the new and growing pharmaceutical phase of the aerosol industry.

•

Pennsalt Appoints Gould

The appointment of John D. B. Gould to the refrigerant sales staff of Pennsalt Chemicals Corporation's new line of "Isotrons" was announced from the company's Philadelphia headquarters last month. Following a training period at Philadelphia and in the firm's research and development laboratories at Wyndmoor, Pa., Mr. Gould will serve the Middle West from Pennsalt's Chicago office.

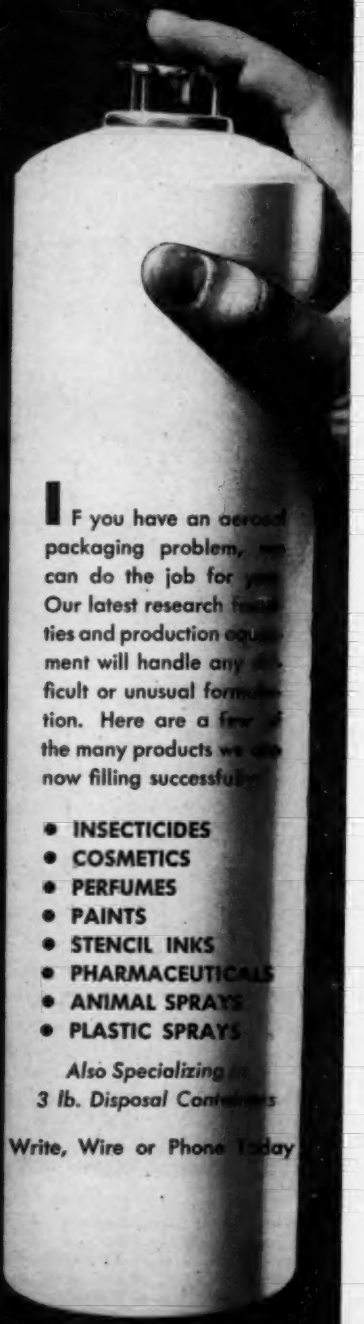
•

Emulsol Names Friedman

Emulsol Chemical Corp., Chicago, a division of Witco Chemical Co., has announced the appointment of Sy Friedman to its sales staff as assistant to A. O. Raven, sales manager. He was formerly with Stauffer Chemical Company's research department, where he had extensive experience in formulating pesticide chemicals.

Specialists in Small Run

AEROSOL PACKAGING



IF you have an aerosol packaging problem, we can do the job for you. Our latest research facilities and production equipment will handle any difficult or unusual formulation. Here are a few of the many products we are now filling successfully:

- INSECTICIDES
- COSMETICS
- PERFUMES
- PAINTS
- STENCIL INKS
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Also Specializing in 3 lb. Disposal Containers

Write, Wire or Phone Today

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BROOKLYN, N. Y.

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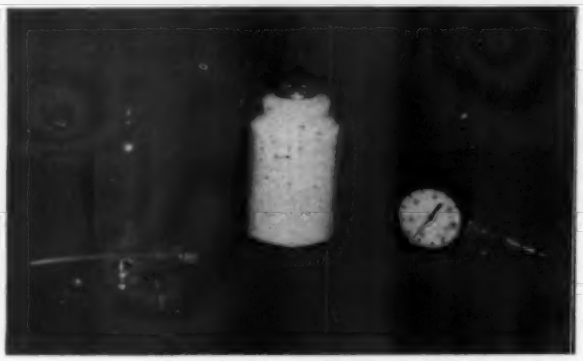


Here's all you need for your pocket-sized lab. (Left) screw-on top, plastic-coated bottle (disassembled) with valve. Center—can of propellant complete with transfer valve. Right—hand pressure tester.

MAKE YOUR OWN AEROSOL SAMPLES

This quick, easy method allows you to make aerosol samples of your own or prospective customers' products in 5 simple steps . . . without investment in expensive equipment. (1) Pour your product into the dispenser can. (2) Fasten valve in place with screw retaining piece. (3) Fill with propellant. (4) Test for pressure. (5) Spray your finished aerosol—all in less than a minute!

PRICES: 6 sets, including 2-oz. plastic-coated bottles, screw-on tops and valves—**$23.50.** 6—12 - oz. cans of propellant with filling head (specify propellant required) **$21.00.** Hand pressure testers—**$8.50, $15,** and **$47.25.**

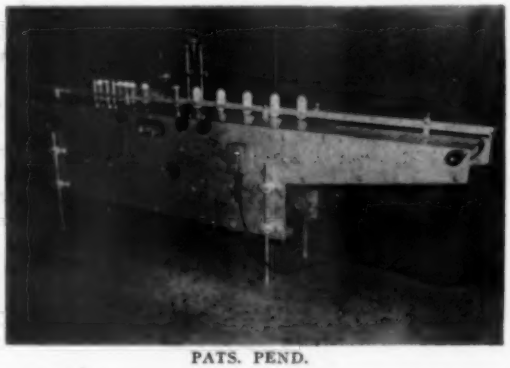
Write for quantity rates—also for our complete catalogue of aerosol laboratory equipment

Builders Sheet Metal Works, Inc.

108-110 WOOSTER ST. NEW YORK 12, N. Y.

CODE DATING MACHINE FOR AEROSOL CANS

Will mark the top or bottom or both at the same time



PATS. PEND.

Kiwi® Coders Corporation announces a new power-driven machine for economically and automatically code dating the concave bottoms of pressurized cans or flat bottoms of other round containers. Can also be used as a work table for affixing parts to cans.

Send details on your specific marking problems.
Literature available on all types of applications

Kiwi® Coders Corporation

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Who's Who in the Aerosol Industry

Clarence (Pete) Clapp, vice president and member of the board of directors of Western Filling Corp., Los Angeles, has been a part of aerosol filling quality control, research and development field since 1949. After serving in the Navy during World War II, Mr. Clapp attended the University of Illinois in the curriculum of chemistry, graduating in 1949.

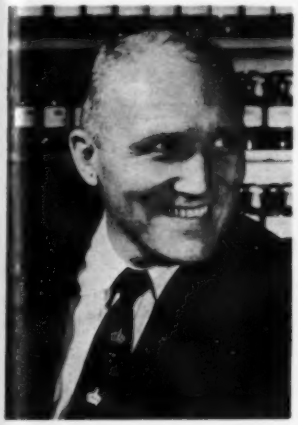
He then joined Continental Filling Corp. In 1951, he was named manager of the research department, which included responsibility for of quality control.

In 1953, Mr. Clapp joined three associates to found Western Filling Corp. Starting out as a small corporation, this group designed and built equipment which today includes, in addition to the laboratory, four individual filling lines for separate handling of different product types, employing both the cold and pressure filling techniques. The company is now moving to a new and larger location, is installing a new high speed cosmetic filling line, and recently formed a new division for the custom packaging of pressurized food products.

Mr. Clapp has been a member of CSMA since 1950 when he became a member of the Aerosol Scientific Committee. He is also a member of the California Cosmetic Association, and of the Society of Cosmetic Chemists. In CSMA he is currently a member of the Insecticides Standard Methods Subcommittee, which originally started as a private group working on a co-operative valve testing program, the Membership Committee, the Public Regulations Subcommittee, and is chairman of the Special Can Pressure Determination Subcommittee. Under his direction the latter

subcommittee recently prepared a method for measuring internal pressures of aerosols. This method will be used for shipping regulatory purposes.

Herbert Kainik, perfume consultant for Dodge & Olcott, Inc., New York is a veteran perfumer and has been a member of the perfume industry for more than 25 years. In addition, he is one of the few of its members who has been active in the aerosol field, with all its special problems, since its inception.



The author of several comprehensive articles on the subject of perfumery, he has served as an officer of the American Society of Perfumers. His paper at the 42nd midyear meeting of the CSMA (titled "Fragrance Stability of a Group of Perfume Fragrances in an Alcohol/Propellant System") was an important contribution to the body of knowledge in this field. He is currently a member of the CSMA's Scientific Committee.

Mr. Kainik is known for his "on the premises" work with aerosol manufacturer's technical staffs.

Emil Hirschburger, organizer of Aerosol-Service, Inc., Riehen, Switzerland, reportedly the first exclusively contract loader on the Continent, learned about aerosols in 1949 from articles in American trade journals. His interest in the chemical specialties field stemmed from his activities in The Dravida Co., soap and laundry product manufacturers, of which he is a director.

Complications brought about by the Korean War and the stepped-up "Cold War" delayed his receipt of American filling equipment until 1953, and it was in that year that he organized Aerosol-Service. During the next few years Mr. Hirschburger beat the bushes in Germany and Switzerland, spreading the word about aerosols, and by 1955 his company

(*Continued to Page* 00)

FOR AERATING FOOD PRODUCTS

S.S. WHITE

NITROUS OXIDE • CARBON DIOXIDE MIXTURES FOR . . .

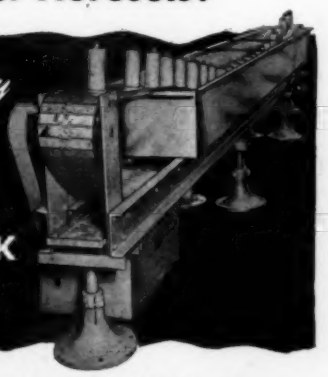
WHIPPING CREAM
MAYONNAISE
SALAD DRESSINGS
VEGETABLE OIL TOPPING

THE S. S. WHITE DENTAL MFG. CO.
211 So. 12th St., Phila. 5, Pa.

PROTECTION TO PROCESSORS UNDER PATENTS 2,250,330 GOODMANN, 2,155,260 DILLER

Test your Aerosols!

Automatically in ISLAND'S new HEAT and LEAK TEST TANK



Stainless steel Rex Table-Top chain, available in various widths for single or double lines of cans...and the cans are prevented from slipping on the incline and decline by magnets attached to the chain track. The tank itself may be constructed in hot dipped galvanized or stainless steel, and the unit serves as both a heat and leak test tank.

FREE! MAIL THIS COUPON FOR FULL DETAILS

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Please send particulars on new HEAT and LEAK TEST TANK

COMPANY.....

NAME.....

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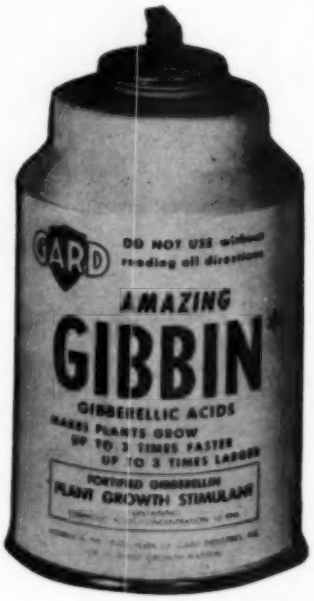
Second Gibberellic Aerosol Hits Market As Research on Growth Stimulant Continues

GIBBERELLIC acid, the new plant growth stimulant (AEROSOL AGE, June, p. 43) is continuing to attract much attention in the aerosol industry. Gard Industries, Inc., Wilmette, Ill., recently joined the Plant Products Corp., Blue Point, L. I., in the production of aerosols aimed at the 1957 summer home-garden market. Pennsalt Chemicals Corp., Philadelphia, propellant manufacturer, demonstrated an experimental formulation for aerosol dispensers at the May 20-22 meeting of the CSMA. And there is evidence of other interest from aerosol packagers throughout the country.

Gard's product is "Gibbin," a 12-ounce container retailing for $2.95. It is accompanied by a direction folder that includes experimental recommendations. The company reports: "Under the right conditions almost any plant will respond to 'Gibbin.' It makes plants grow up to three times faster, up to three times larger. It can break dormancy, speed germination, speed turf growth, etc. . . . It equally effective for use outdoors and indoors, in greenhouses, florists' shops, or homes."

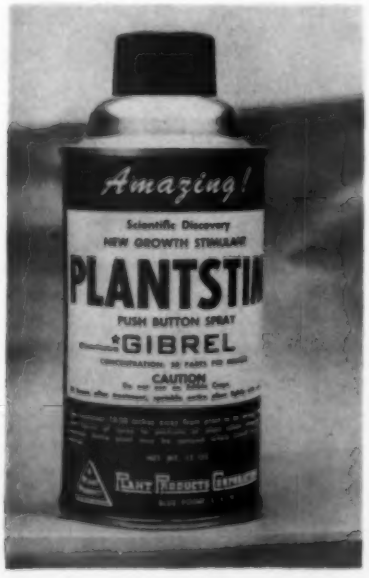
Attracting considerable attention at the CSMA mid-year meeting was a three-ounce Wheaton plastic-coated glass container, equipped with a VCA metered valve, which provides a measured dosage with each release of the valve. The contents of the



dispenser will yield in excess of 500 applications.

The Pennsalt container was introduced to CSMA members at a special demonstration lecture, May 20th, Wiley Pickett, Pennsalt "Isotron" sales director, called pressurized gibberellic acid products probably the "next major product type in aerosol form."

Still another use for the plant growth stimulant — that of producing lush, green lawns in mid winter, has been announced by Merck & Co., Rahway, N. J., one of the four major producers of the substance.



Merck & Co., Inc., Rahway, N. J., late last month issued a special brochure for aerosol manufacturers listing formulations, label instructions, prices, and general instructions for consumer use of the product on various garden plants and shrubs.

Dr. Sylvan H. Wittwer of Michigan State University, speaking at a seminar sponsored by Merck & Co., told a group of Merck and Rutgers University scientists that he had sprayed the chemical on strips of brown, frozen grass. In five days the treated turf turned green.

•

Fluid Appoints Marzene

Fluid Chemical Co., Newark, N. J., has appointed Richard D. Marzene, Jr. to the position of director of purchases. He served 12 years with the Bank of Commerce in Newark, rising to the position of vice-president, and later was vice president of the Central Bank & Trust Co., Miami, Fla. He will also act as Fluid's financial advisor.

•

Dow Introduces Spot Remover

Sample all-purpose home spot remover aerosol units, recently produced by The Dow Chemical Co. Midland, Mich. demonstrate that "Chlorothene," Dow inhibited 1, 1, 1-trichloroethane, can be used successfully in aerosol packages without damage to aerosol components.

The units, introduced for demonstration purposes by Dow at the CSMA's midyear meeting in Chicago, contain 75% "Chlorothene" and 25% propellant 12. "Clorothene" reportedly serves the dual purpose of vapor pressure depressant and cleaning solvent.

As an all-purpose spot remover "Chlorothene" can be used on all fabrics and most surfaces to remove

oil and grease type stains. Though Dow has declared that it does not intend to produce aerosol formulations commercially, this formulation is said to offer commercial possibilities as a spot remover, typewriter or business machine cleaner, and in similar aerosol applications.

Glass Aerosols

(*From Page 40*)

Index of Expansion Energy Can Be Used for Safety Evaluations

In the English paper few attempts were made to find the explosive force exerted on glass fragments. If adiabatic expansion is assumed, the total work of expansion can be figured by the laws of thermodynamics and the work per unit weight of the contents could be used as an *index* of the available explosive force (not force itself). The formula for the total adiabatic work (in Kgm) performed by adiabatically expanding vapor or gas is:

$$L = \frac{P_2 V_2}{K-1}\left\{\frac{V_2}{V_1}^{K-1} - 1\right\}$$

where P_2 = the pressure of surrounding after expansion in Kg/m^2, here assumed to be the atmospheric pressure = 10.330 Kg/m^2

V_2 = the volume of the contents of the bottle in the instant after breaking and flashing, as figured before, in cubic meters

V_1 = the volume of the bottle in cubic meters

K = the ratio of specific heats C_p/C_v

V_2/V_1 is known as the "expansion ratio." It indicates here how many times the volume of the contents expands at the moment of breaking. Using the values figured previously for the formulation "a" and taking the extrapolated value $K = 1.09$ for propellant (thermodynamic porperties at 1 atmosphere and the temperature range 40° F — 70° F) we obtain the work for formulation "a":

$$L = \frac{10330}{1.09\text{-}1} \times \frac{468.5}{1{,}000{,}000} \times \left\{ \begin{matrix} 1.09\text{-}1 \\ (7.2) \end{matrix} - 1 \right\} = 0.97 \text{ Kgm}$$

The proposed *index of available expansion energy* is defined as the ratio of expansion work L to the W_c weight of the content, in Kg, or

$$B = \frac{L}{W_c}$$

In the formulation "a":

$$B = \frac{.97}{.050} = 19.4 \text{ m}$$

The index β of the expansion energy L can be figured for any formulation by the above formula IV. Certainly even within the same formulation this value will increase with temperature. This index β can be used as a measure of potential hazard and can serve for evaluation of aerosol products. Research work is currently being conducted at Fluid Chemical Co. to determine acceptable safe limits of the index for every aerosol formulation in relation to different types and sizes of glass containers.

Formulating for Safety

Mr. Pickthall's paper was well written and convincingly illustrated. However, it should be pointed out that the formulations "a" and "b" used in the English test bottles were *not* appropriate for that type container, and certainly not in line with comparable American products. Our recommended formulations for uncoated glass aerosols do not exceed the pressure of 15 psig at 70° F, nor do they contain any more than 36% propellant by weight. This means that the results of the English tests can neither be accurately related to American marketed uncoated glass aerosols, nor to the literature describing them.

Even had the formulation used by Mr. Pickthall been correct, the drop test data, although very interesting, are obviously insufficient. The type

(*Continued on Page 66*)

KILL Odors Chemically WITH METAZENE®

(specially refined esters of methacrylic acid, U. S. Patent, 2,544,093)

Metazene acts differently from most space deodorants in that it actually *destroys* odors *chemically*. It is neither a masking agent nor a desensitizer. No other compound compares with Metazene in its complete odor killing properties.

Here's a whole new market for you! Metazene has been found to have great appeal to the many consumers who object to strongly perfumed deodorizers.

Available to the Aerosol merchandiser as an 80% concentrate. Write for technical data and prices.

MOTOMCO, INC.
TERMINAL AVENUE • CLARK, N. J.
Producers of famous
PIVAL® *and* PIVALYN® *Rodenticides*

A Correction

In the May issue of *Aerosol Age*, in the article entitled "Aerosols in Japan", there appears the following paragraph: "About this time there were a number of developments that considerably 'picked up' the Japanese industry. N. Iosaki, manufacturer of 'Earth' brand insecticides, purchased an Alpha cold filling machine and a quantity of Aerosol Research K-38 type valves from the U.S. Utilizing these, he commenced production and sale of an aerosol insecticide."

This paragraph gives the impression that Mr. Iosaki was the developer and manufacturer of 'Earth' brand insecticides. Actually, the Kimura Chemical Co., rather than Mr. Iosaki, is the developer and manufacturer of this product, which also is being marketed in non-aerosol form.

Also, the article gives the general impression that Aerosol Research valves are the only valves of American manufacture being imported (in quantity) into Japan. Actually, Risdon valves have also been imported in considerable quantity, and in fact a good number of the valves on the products pictured in the photos accompanying the article are of Risdon manufacture.

Consultant's Corner

(*From Page* 42)

ment, coupled with a few dimensional recommendations for the clinching head. To date the work at Continental indicates positive correlation between high torque readings (40-80 inch pounds) and good sealing. However, I think the committee should accumulate data from the machine for all caps, gasketing material, and curl profiles checked against weight loss of "hard to hold" contents against time. Pure propellant 12 would be a likely candidate for that last "hard to hold" category.

As a matter of record, I must add that my enthusiasm for the "Torque Tester" resulted in permission being given me by Continental to include it for sale along with my own units, which are handled by my Apparatus Division. Of necessity, because of this, this column has sales pitch overtones which I ordinarily avoid, but I can assure my readers that the column would have been written as it stands with or without the sales arrangement.★

Scientific Papers

(*From Page* 21)

of 40 psi and below). "A Swiss firm of repute guarantees its two-piece aluminum containers for 12 atmospheres or 170 psi — four times the recommended pressure. In Sweden, the authorities responsible for pressure vessel approval took a single-piece aerosol of Italian make, filled it with product and propellant, stuck it in a cooker and heated the water to boiling. The container was perfectly tight. They then transferred it to an oil bath and continued the process until they reached 130°C. or 267°F. The container burst and the metal disappeared completely. Neither filtration or chemical analysis could find a trace of it. It had disintegrated into molecule parts, but not before it reached 267°F., which should suffice."

"We see no reason, therefore, why aluminum containers may not be permitted for aerosols with internal pressures up to 90 psi."

Mr. Taranger advised that since aluminum is more prone to denting than steel or tinplate containers, the use of vertical dividers in final packaging would be an added safety precaution in higher pressure aerosols. "By suitable choice of wall and bottom dimensions, the aluminum container will meet all requirements when packed in suitable outer cartons using vertical dividers."

He described how research toward reducing the cost of converting aluminum ingot to slugs for impact extrusion, and other new techniques, is reducing prices for aluminum containers, particularly in Italy.

Of the two most utilized methods of preventing attack of the container by chemical action of the active product and/or propellant, Mr. Taranger said of the lacquer coating method for one piece cans that it is "somewhat expensive." In some cases, he said, four coatings are required, and advised that, for most products, aluminum *without* protection is sufficiently corrosion resistant.

The second method, the strengthening of the aluminum oxide coat with an anodizing bath, he said holds considerable promise, particularly since "anodized containers can withstand attack from all commercial products and propellants presently being used in Europe."

As the principal sales appeal assets, he listed:

"1. There is no seam other than the joint at the valve seat.
"2. The bottom is domed to add strength against bulging.
"3. The outer surface may be lacquer coated, printed in four colors, and varnished; and, in an additional operation, the walls can be fluted, or ribbed."

In a country-by-country summary, Mr. Taranger reported that Italy and Switzerland are most active in the aerosol aluminum container field. In the latter country, two piece containers (with the bottom ends of aluminized steel—Ferran), additionally lacquered to avoid corrosion, are being employed. In Italy, monobloc and two-piece containers with both tinplate and aluminum alloy ends are being produced.★

Ed. Helfer, Powr-Pak

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Industry Chided

(From Page 18)

even four cans in a single sleeve or package).

6. A tremendous increase in pressurized food products. "The biggest gains in volume will be in food field." He predicted further development of such products as barbecue sauce, ice cream topping, syrup, etc., in pressurized containers.

"AEROSOL Propellants — 1947, Present, and Future," a paper by Winston H. Reed, Reed Research Corp., Shelton, Conn., outlined the development of propellants from 1947, when insecticidal aerosols of the high-pressure type, using propellant 12 alone, were the only commercial aerosol products.

Mr. Reed rated the various advantages of the liquefied propellants against those of the non-liquefied compressed gas systems, such as CO_2, nitrous oxide, nitrogen, etc. and declared: "At the very beginning of this industry, work had been started along two major avenues for reducing propellant costs; one, by the use of cheaper diluents in one phase systems; two, by the use of two liquid phase systems.

"The future trend in aerosol propellants is not hard to discern. Research activity will continue along the roads first explored over ten years ago and the side paths opened up since then . . . The development of improved and varied containers, new can linings, valves which give superior atomizing characteristics, the use of inhibiting agents, emulsifying agents, and co-solvents, have increased the possibility of using a wider variety of propellants and decreasing their cost."

"LIQUEFIED Gas Insecticide Formulas — 1947 Present and Future," by R. A. Fulton, USDA Agricultural Research Service, Entomology Research Branch, Beltsville Md., traced the history of the early days of the aerosol industry. Dr. Fulton described how cooperative research by the USDA and manufacturers of cans led to the developmen

of the presently used low-cost containers.

He reported that, between 1947 and 1949, 479 insecticidal aerosol combinations were tested by the USDA, and that in 1949 the Official Test Aerosol was adopted.

He called on all aerosol manufacturers to maintain research laboratories or installations to meet the demands of growing competition, and showed a number of early aerosols to demonstrate how packaging methods and technology have improved over the ten-year period.

S. JACK CAMPBELL, sales manager, Continental Filling Corp., Danville, Ill., speaking on "Aerosol Valves — 1947, Present, and Future," predicted an increasing tendency to use variations in valve design for the particular product, together with an even greater transition from metal to plastics.

"Valves in the next ten years," he declared, "will be beyond the vision of our most imaginative designers today."

Mr. Campbell, too, traced the growth of the valve industry from the first tentative valve designs to the currently existing 200 functional variations of valves in existence, and from one or two experimental producers to the more than 20 today.

"The major contribution of the valve industry," he said, "was that its developments allowed a surge in the number of products packaged under pressure."

AN INCREASING trend toward automation, which he termed "a dual highway stretching on ahead," was the prediction of J. H. Fredette, American Can Co., New York, speaking on "Aerosol Filling—1947, Present and Future."

"The future, in the crystal ball, shows a line operating something like this — propellant will be received and handled much as it is today, quite automatically. Product-propellant mix will be accomplished and supplied to the filler automatically, as it is today. Cans will be received, jumble packed in large cartons, unloaded and

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fed to the filling line automatically. An unscrambler will set them right end up on the conveyor. They will pass through the filler, through the automatic valve inserter, to a seamer or crimper, then through the hot water bath and dryer. Buttons and overcaps will be applied automatically. They will be packed, sealed, and stacked on pallets by an automatic packer. This kind of line will operate at speeds in excess of 3000 units per minute with a minimum of labor required."

Mr. Fredette admitted that the cost of the best equipment and of the installation of the best materials handling is high, but advised that cost will be found justified by the resulting ability to supply those markets on a sound, profitable basis."★

Food Aerosols

(*From Page* 24)

10. The same spray pattern is always duplicated.
11. The operation of the dispenser is entirely independent of the position in which it is held. It works equally well upright or upside down.

One can see why our optimism for this new container is extremely high.★

Aerosols in Review

(*From Page* 28)

of the paint filler, a crimper, and the propellant charger. With it you'll need connecting conveyors and a labeler. ICC regulations also call for a temperature regulated water bath to check for leakage and to test seams.'"

"'You'll probably have to fill five or six million cans a year before you can run a cold line more profitably than a pressure line,' Jim Jago says. 'That's just my guess though. The break-even point depends on the individual operation.'"

The article warns that the "rough item" with which the paint manufacturer will have to cope is propellant and propellant storage. "Probably the soundest way to start with propellant is to buy it in cylinders. This is the cheapest way to start, but the most expensive way to operate. Once the line is going, and shows promise of being a profitable venture, the thing to do is switch to some form of bulk handling and storage for the propellant."

The paint chemist, it is reported, will have the hardest job. "With quality control and possibly the formulation as his responsibility, the paint chemist must learn the whys and wherefores of a huge number of valve types and orifices, solvent systems in connection with the various types of propellants, and what is largely a new field of chemistry."

A LISTING of all pesticides packaged or sold to control rose pests is included in the *American Rose Magazine* for May. The list, including brand name, manufacturer, and percentage of fungicide, insecticide, and miticide in the formulation, accompanies the monthly column entitled "Rose Pests."

Of aerosol rose sprays, the article has this to say: "The little bombs are good for spot treatment, but it is quite difficult to get complete coverage of a bush outdoors where there is almost always some wind, without getting too near to some parts of the bush. Bombs are also too expensive for regular treatment of more than one or two bushes, but they are mighty handy to have on hand to whiff at a few aphids or beetles or thrips that turn up between sprays."

THE English antibiotic powder spray, "Polybactrin" is the subject of "Aeroscripts" in the April *American Perfumer & Aromatics*. The author of the monthly column, Jack Pickthall, devotes the beginning of his discussion to the Vapsol detachable valve with which the product is equipped:

"This Italian valve is said to contain several special features which make for efficient powder spraying, thus the rubber seating is of special flexibility and the spray tension specially designed. In addition, the nozzle cylinder in the powder spray is straight as opposed to the spiral action for liquid dispersion. The micro dip-tube is reputed to increase the length of life of the contents. The tapered round bottle is adequately coated with 0.03 inch of polyvinyl chloride . . .

. . . "The claims are that the three antibiotics are presented in an ultra fine powder form and whilst the bactericidal properties are well known, bacteriological tests with the pressurized product have shown the remarkable speed and economy of the product in securing complete inhibition of wound pathogens.

"Partly shielded plates inoculated with *staphylococcus aureus* were exposed to the influence of one-fifth second pressure of the button of the unit at distances of one-half and one meter. At both distances, complete inhibition was obtained.

"In a second test the powder was released for two seconds in a draught free room and immediately afterwards a number of partly shielded plates were exposed successively for 30 seconds each in the area of the sprayed zone. The results showed complete inhibition was obtained with 30 seconds exposure of the first plate and almost complete inhibition after the same time of exposure of the second plate. Even the third and fourth plates showed significant areas of inhibition after 30 seconds of exposure, thus indicating that after a two second spray, solid particles of antibiotics remained suspended in the air for at least a period of two minutes. Identical tests using *Ps. pyocyaneus* as the test organism produced the same results.

"The antibiotics employed are rarely given systemically. Their action when applied locally extends no further than the tissues under treatment. Their combined action is synergistic and includes the whole range of wound pathogens. Owing to the rapid bactericidal action of these three antibiotics, the risk of development of bacterial resistance is reduced to the absolute minimum."★

New Aerosol Patents

The data listed below is only a brief review of recent patents pertinent to the readers and subscribers of this publication.

Complete copies of these patents may be obtained by writing to the publisher of this magazine, Aerosol Publications, Box 31, Caldwell, N. J., and remitting 50c for each copy desired. For orders received outside of the United States the cost will be $1.00 per copy.

2,792,161. CONTAINER CLOSURE. Patent issued May 14 to Fred G. Thomas, Somerville, N. J.

Container closure for a container having a flaring top and a neck with an outlet bore, said closure comprising a hollow plug slidable in said bore and having a bottom inlet and a side outlet, and resilient wings comprising flat strips no wider than the internal diameter of said neck outlet bore and integral with said plug on respective opposite sides thereof, said strips being spaced apart around the plug, leaving free areas of said plug at the spacing therebetween, said strips having corners below the level of said outlet, and said strips extending laterally and diverging upwardly from said corners for a strip length greater than the distance from said inlet to said outlet, and forming cantilever leaf springs to terminally engage radially outer portions of the underside of said flaring top.

2,792,971. PARTICLE AEROSOL GENERATION. Patent issued May 21, 1957 to Carl B. Kaiser, Rochester, N. Y., assignor to The Haloid Co., Rochester, N. Y.

A generator of an aerosol of powder particles for xerographic development comprising an air-tight housing, a section in said housing adapted to be removed to allow the insertion of powder particles into said housing, an input tube extending into said housing, a tubular ring positioned within the housing near the base thereof, another tubular ring positioned within the housing near the top thereof, a plurality of tubes vertically positioned within said housing extending between said ring near the base and said ring near the top, said input tube being connected to said tubes positioned within said housing and adapted to supply compressed gas to said tubes within said housing, a multiplicity of fine holes in said vertical tubes adapted to produce a circular swirl of gas within said housing, a multiplicity of fine holes in said tubular ring near the top to direct gas flow downward into said housing, a multiplicity of fine holes in said tubular ring near the bottom to direct gas flow upward in said housing, and an output tube extending into and out of said housing adapted to supply an output aerosol of powder particles out one end thereof, the other end thereof adapted to have connected thereto a supply of compressed gas and that portion of said output tube positioned within housing having a multiplicity of fine holes therein.

2,793,794. EDUCTION VALVE FOR PRESSURE DISCHARGE DISPENSERS. Patent issued May 28, 1957 to Arthur J. Samuel, Pittsburgh, Pa., assignor to Gulf Development & Research Co., Pittsburgh, Pa., a corporation of Delaware.

An eduction valve for dispensers, which permits discharge from such dispensers in both upright and inverted positions under pressure of a contained gas, comprising, in combination with a receptacle having a manually operated discharge valve assembly, an eduction tube extending from the discharge valve assembly into the receptacle and having a straight section in proximity to the said discharge valve assembly, such straight section being formed with a lateral port in its wall, an imperforate annular member constituting a slide valve mounted on said straight section of tube, means providing a shoulder on said tube against which said slide valve abuts at the extremity of its movement when the receptacle is in upright position and in which position the valve thereby covers the port, the port being so located in the straight section of tube that upon inversion of the receptacle the slide valve in moving to its other extreme position uncovers the port for admission of the pressurized contents into the eduction tube.

2,793,912. NOZZLE ASSEMBLY. Patent issued May 28, 1957 to Fred A. Krohn, Hobart, Inc., assignor to Productive Inventions, Inc., a corporation of Indiana.

A spray device of the kind described comprising a body having a base portion for support relative to a mounting for the body and an integral portion projecting from said base portion for entry through an aperture provided in the mounting, a fastener con-

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nected to said extending portion for attaching the device to the mounting with the latter clamped between the base portion and fastener, said projecting portion having an axial passage and said body having an axial passage constituting a continuation of the passage in said projecting portion, said body also being provided with a transverse threaded aperture intersecting the passage in the body, a fitting having an integral reduced exteriorly threaded portion secured in the aperture of the body and an enlargement located exteriorly of the body and having a socket therein, said reduced portion being provided with an axial passage communicating with the passage in the body,

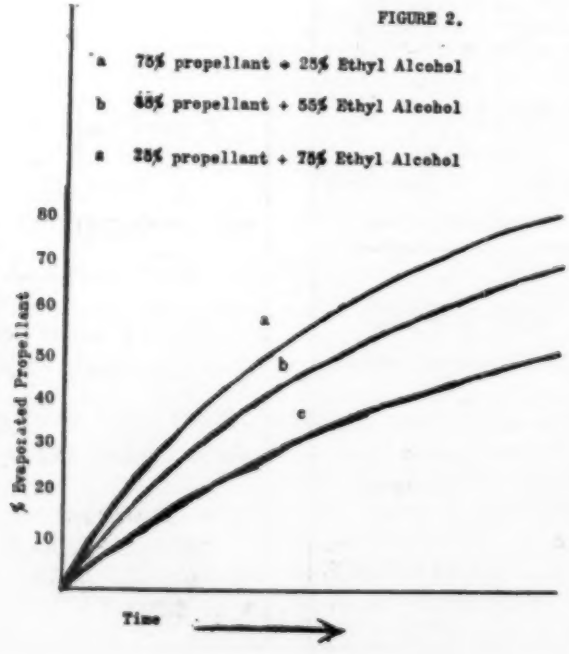
Glass Aerosols

(*From Page* 59)

bottles, the drop test mechanism, and the temperature of contents at the time of dropping were not adequately described. The results obtained in England from hundreds of bottles dropped onto a steel plate or concrete from one specific height which has been chosen to be 6 ft. 6 in. cannot be conclusive from a statistical viewpoint. Analysis of results of many thousands of bottles dropped, according to particularized instruction in collaborating American laboratories, proves the need for a reproducible, scientific statistical procedure for testing. Only after the obtaining exhaustive statistical data can a true conclusion be drawn and standard methods of drop-testing be developed.

Mr. Pickthall claims that uncoated aerosol glass bottles are dangerous. There is no doubt that flying glass fragments constitute a potential hazard to the consumer. This fact, however, cannot serve as a criterion for elimination of uncoated glass aerosols from the market, and there is no reason for American packagers to panic. If sufficient care is exercised in the development of suitable formulations and in the manufacture of appropriately designed and well annealed bottles of adequate thickness, the uncoated aerosol bottles may be reparded as relatively safe.

FIGURE 2.



The modern way of living is full of pitfalls and potential hazards; many people have lost their lives because of car accidents, electric shocks, misuse of drugs, negligent handling of cooking gas or cleaning fluids. However, the widespread use of cars, electricity, drugs, hydrocarbon gases, cleaning fluids, etc., confirms the fact that a potential hazard is not necessarily followed by casualties, when safety features are duly recognized and respected. In relation to uncoated glass aerosols, it should be mentioned that many millions of such containers have been used in the USA in recent years; and, to the best of our knowledge, not even one serious case of injury has been reported to date!

Comparing the hazards of carbonated beverages with aerosols, Mr. Pickthall remarks "Despite the fact that a beverage bottle contains as much as 60 psig, this pressure will only develop on agitation," thereby suggesting that there will be no danger on breaking. It is nevertheless evident that upon dropping and breaking, the contents of the bottles will become agitated. It should also be pointed out that carbonated beverages are often stored in refrigerators, and occasional formation of ice in the bottle would free the carbon dioxide and make it available for expansion after breaking or even after opening the container.

We agree that small containers of carbonated beverages do not project glass fragments as far after breakage as do true aerosol bottles of the same size. (See: "Safety Factors of Glass Aerosols" — *Aerosol Age* — August 1956). We should, however, be realistic and compare facts as they occur in everyday living: Uncoated glass

CLASSIFIED ADVERTISING

Rates for classified advertisements are ten cents per word, $2.00 minimum, except those of individuals seeking employment which *Aerosol Age* will run without charge. Check must acompany all classified advertisements. Address all replies to Classified Advertisements with Box Number, care of *Aerosol Age*, Box 31, Caldwell, N. J. Closing date: tenth of month preceding month of issue.

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aerosols are produced in the USA in sizes from ¼-ounce to about 2-ounces, but carbonated beverages are sold in containers up to one quart. The larger the bottle, the more likely it is to become shattered on dropping. It is obvious that a ¼-ounce unprotected glass bottle has a very small chance to break and may be regarded to be even safter than the large beverage or plastic coated bottles. Of course, large aerosol bottles, especially those over two-ounce size, properly protected by a plastic coating or its equivalent, are much safer than uncoated ones of the same size.

Conclusion:

We do not infer that only one type of container should be recommended for every aerosol application. Our tests and experience at Fluid Chemical Co. (and, also, the general acceptance of millions of uncoated glass aerosols by the public) prove that the unprotected glass bottles definitely have their place in the aerosol industry. There is no undue risk involved in their marketing as long as their construction, the formulations packaged and filling procedures fully conform to basic safety principles.★

Aerosol Product Survey

(*From Page* 33)

gory is growing rapidly. Chiefly within this category, glass containers have shown a 50% increase. Total glass containers reported used in 1955 were 10,411,560, against 15,092,994 in 1956.

"For the first time during our surveys, the six-ounce and less container has outnumbered the 12-ounce size. Container increase for 1956 has been almost entirely in the six-ounce and less and the 16-ounce but over 12 category. In its first year of usage, the large aerosol container has shown considerable acceptance, with 32,776,949 reported."

Mr. Lodes pointed out that for the first time this year the high pressure aerosol was dropped from the questionnaire. He said that the decision was made since a very few producers contribute to this relatively small figure, and that the dropping of this type of aerosol from the survey "ends an era and marks the passing of a milestone in aerosol progress."★

•

Graham Nominated by CSMA

W. Earl Graham, Crown Cork & Seal Co., Can Division, Philadelphia, has been nominated to head the CSMA's Aerosol Division in 1958. The nominations, made at the association's mid-year meeting in Chicago, included W. E. Baulieu, Bridgeport Brass Co., to be vice-chairman; and Charles E. Beach, John C. Stalfort & Sons, outgoing chairman; William T. Egan, Colgate-Palmolive Co., and E. J. McKernan, Seaquist Manufacturing Corp. to fill out the rest of the division's administrative committee.

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Who's Who

(*From Page 57*)

was able to open another contract loading station at Braunschweig, Germany.

At present, his company's principal business comes from the large number of U. S. companies that are loading their products in Europe, but a number of European firms are coming around to relying on the custom filler.

Mr. Hirschburger is German born, but has lived his past 26 years in Switzerland. His plant at Riehen is only a few hundred yards from the German border, and overlooks the Black Forest region.

He looks with high optimism on 1957, which, he says, will be Europe's first real aerosol year.

From the Mailbag

(*From Page 68*)

To the Editor:

In your January issue, you mentioned that a European Aerosol Trade Association is being formed. As European aerosol loaders, we are very much interested in such an organization, but haven't yet heard of it here. Would you be able to give us more detailed information as to where we can get further information?

On this occasion we should like to say that we have read *Aerosol Age* from the beginning, and are pleased that this industry finally has its own interesting magazine.

J. de Vuyst
J. Ribeaucourt
A. CHRISTIAENS S. A.
Brussels, Belgium

The association to which you refer is probably the Annual Congress of the German Society for Aerosol Research, a meeting which our overseas' correspondent, Dr. Tom C. Clark, Druk-Pak, Ltd., Zurich, thinks may someday form the nucleus for a European Aerosol association. A letter to Dr. Clark will bring you the latest information on this organization.

To The Editor:

In the January issue of your interesting publication we read about an "HCI aluminum inhibitor," and would appreciate it very much if you could let us know the name of the manufacturer of this product.

Also, we'd like a list of the manufacturers of filling machines, and of the various chemicals for use in aerosols?

We in Argentina are fighting to open up this new field for aerosols but have found it extremely difficult to work in such a specialized industry without adequate help. We must declare, however, that your magazine has done wonders for us.

We have read the article on the aerosol industry in our country in your February issue, and we fear it does not represent the actual situation here.

Alberto Trilles
AEROSOL ARGENTINA, S. R. L.
Corrientes 484
Buenos Aires, Argentina

We have furnished Senor Trilles with the information about the aluminum inhibitor, and provided him with a list of aerosol equipment manufacturers. Readers who produce "chemicals for use in aerosols" are invited to send descriptive literature to Senor Trilles.

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Insect Repellents

(*From Page 34*)

mological Research Laboratory at Orlando, Florida, using colonies of insects specially imported from the front lines in Korea.

A clean, oily liquid, diethyl toluamide occurs in three isomers: ortho, meta and para. The meta form is about 10% more effective than the para or ortho forms. Non-toxic, it has a faint, pleasant odor and stays on the skin longer, remaining effective against the rub of clothing, perspiration, water action and evaporation.

In aerosols, formulations containing 10 to 50% DET are employed, and isopropyl alcohol is reported to be a satisfactory solvent for liquid formulations.

S. C. Johnson is aiming its advertising campaign for "Off" at the sportsmen, picknickers, backyard gardners, children at play, outdoor workers and others who work and play outdoors. It can be safely applied directly to the skin or clothing (except rayon or dynel) and successfully protects the wearer against mosquitoes, biting flies, chiggers, ticks and fleas.

It would seem that insect repellents are not only here to stay, but represent a good potential market for aerosols ready and waiting.★

Aerosol Overseas

(*From Page 44*)

world, so that on a per capita percentage basis—if retail prices are right—there should be an excellent future market for aerosols. Definitely, the Dutch are on the right track and the industry everywhere in their fine little country is in the hands of young and intelligent people. Also, they have the head offices for two of the leading aerosol perfume houses in the world — Polak and Schwartz and Polaks Frutal works, which provides an additional stimulus.

Manufacturing Costs and Retail Prices

As we have long been emphasizing the higher end prices overseas, blaming principally the middle-man's mark-up, (and as his percentage does not now seem especially responsible or out of line with that in other countries), possibly a break down analysis might be helpful—particularly for overseas readers who may be contemplating the business. Accordingly, we venture a cost estimate for a six-ounce air freshener in a welded sean

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tin plate can, inner lacquered. We are using conservative, selected prices of reliable European manufacturers which we believe typical, showing them both in Swiss Francs and U.S. dollars and employing straight fluorinated hydrocarbon propellants. Our equipment amortization is based on a capital expenditure of $6,000 (Sw. Fr. 25,8000) for a complete pressure filling line, installed, with a production turn-over of 1.5 million containers over a 4 years period.

Manufacturing Costs

	$—U.S.	Swiss Francs
Equipment Amortization	0.004	0.0172
Product	.020	.0860
Container	.060	.2580
Valve	.060	.2580
Protective Cap	.008	.0340
Propellant—150 grams	.100	.4300
Label	.002	.0086
Shipping Carton	.007	.0301
Labor and Filling Costs	.001	.0043
Estimate Total	0.262	1.1242
If we now give the manufacturer a 100% mark-up to cover handling, overhead, profit, etc., we have	0.524	2.25
Now, if we take a retail price of $0.93 (Sw. Fr. 3.99) giving the retailer a 30 percent provision on the end price and the wholesaler 15% on the retailer's price, we come out with a net of	0.528	2.274

On such a basis our figures come out all right. But there is just one thing wrong with our figures—the assumed end price. Instead of $0.93 (Sw. Fr. 3.99), the retail price of "Air Fresh"—at least on the Swiss market—is $1.28 (Sw. Fr. 5.50) for the six-ounce can. Now, taking this end price and upping the retailer's provision to 40% and the wholesaler's to 20%, we still come out with a net of about Sw. Fr. 2.65, or 40 Centimes, over our manufacturing cost, plus the 100%. Only by throwing in the "Baker's Dozen" practice (i.e. 13 cans for the price of 12) do we get down again to the manufacturing costs, plus the manufacturer's provision.

As we feel rather confident about our basic cost figures, there must be something wrong with the rest of the picture. Perhaps, 100% is not enough to add over manufacturer's cost, or perhaps we are wrong on the middlemen's provisions. But one thing stands out: based on present production volume and raw material costs, the supplier's prices are not out of line and have, over the past 3 years, been considerably reduced. However, European retail prices do not seem to reflect these adjustments.

We also may be wrong in our assumption that our aerosols are consumer products which should be consumer priced for volume turn-over at low margins, but we doubt it. The only remedy, of course, is competition, which emerges slowly. It is sharp at the supplier's level for containers, valves and chemicals; but tapers off at the retail end. The larger department and chain stores are taking the lead with prices under $1.00 for the smaller cans, but the drug stores with their smaller turn-over keep the prices up. On one point we feel certain: European aerosol production will never really get into high gear until the retail prices come more into line with European buying power.★

OVER THE TRANSOM

THE CSMA midyear meeting brought some indication of a gradually rising dissatisfaction with an event that has become almost an institution — the "open house" or hospitality night. These feelings, expressed to us by a good many members, seem to indicate that this sentiment could develop into one of those minor irritations that gain enough momentum to eventually become a major sore point.

Some members feel that the "open-house" is getting out of hand — has become far too big and unwieldy. For example, at the recent Chicago meeting there were 62 hospitality rooms — a number of them in other hotels. These "outlander" hosts, most of them companies that decided too late to attend the convention, or were unable to get reservations at the Drake, had to spend most of Tuesday evening playing host to empty suites. Their refreshments went to waste and their customers and friends often never reached their quarters.

Even in the Drake, persons who wished to contact certain others missed them completely in the floor-to-floor scramble. Others tended to get anchored in certain rooms and never came close to completing the 62-room course.

All of these — the "outlanders", the disappointed hosts, the ones who missed seeing those "certain people", and even the ones whose suites were stuck away back in some unhandy corner of the hotel, felt unhappy—and with justification. As CSMA attendance grows (and the list of prospective hosts becomes even larger) the hospitality affair will probably tend to become more and more chaotic.

Among the suggested remedies we heard, at least two seem to have some merit.

One suggestion is that the hospitality feature be spread out over the first two or three nights of the convention — allocating the nights alphabetically, by divisions, or by any other logical method.

A second suggestion is that the various host companies combine their assets in one big room (such as the hotel ballroom) operating either all together as an organization, or on different nights by divisions. Each host company could have a section along the wall where it would receive and talk to its guests, with all using a common series of bars and buffet tables. This type arrangement would admittedly take a big room, and considerably organization, but the effort would be well worth it. No one would have to feel slighted, and everyone would get an equal chance to see everyone else.

* * * *

Another minor irritation at the convention is the mad dash for seats at the banquet, a problem that could be solved by simply reserving tables. This could be done according to chronological registration at the registration desk (on a "first come, first served" basis), by lot drawing, or by any other method that would solve the problem democratically.

* * * *

A contest, offering a prize of 250£ ($700.) to the winner, was one of the features of a news and advertisement section devoted to aerosols in the May 21 London News Chronicle. Entrants had to complete the jingle:

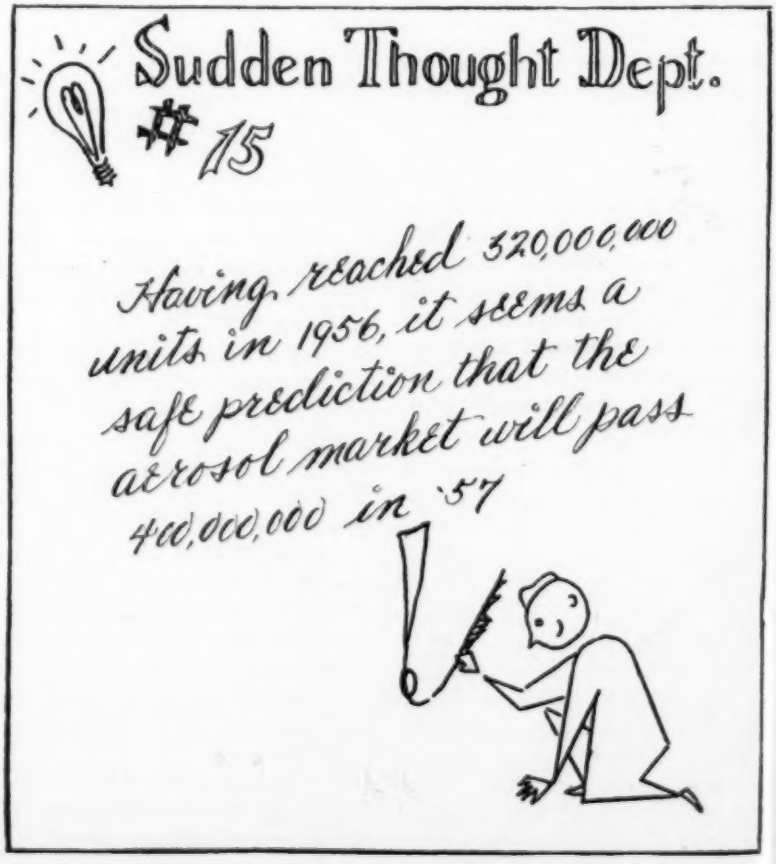
Aerosol packs, so simple to use
With numerous products from which to choose,
For relieving catarrh,
Or spraying a car,
Etc., etc., etc."

* * * *

In this same aerosol section, Elizabeth Gundrey, *News Chronicle* writer, listed various products in pressurized containers in use in England. Her list included one that we never heard of. It's a "dog repellent" which she says is "for deodorizing bitches in season. It also contains a substance with a smell that dogs dislike."

* * * *

Word from California that Edward J. Meier, former managing editor of *Aerosol Age*, has been named advertising manager of Standard Steel Corp., Los Angeles.


Sudden Thought Dept.
#15
Having reached 320,000,000 units in 1956, it seems a safe prediction that the aerosol market will pass 400,000,000 in '57